XVII. SOUTH AMERICAN LOCUSTS (ACRIDOIDEA). II.

By Lawrence Bruner.

The present paper is based chiefly on a rather extensive collection of these insects made by J. Steinbach in eastern Bolivia and southwestern Brazil, a region but little explored heretofore. Other material, however, is also at hand and included that was taken by J. D. Haseman and one or two other collectors in the employ of the Carnegie Museum. A few of the insects, here reported also, are some that were set aside for further study during the preparation of my two former papers published in these Annals. As stated in the preface to my last paper (Annals, Vol. VIII) reports are also in the course of preparation by me treating both the Grylloidea and Phasgunurids or long-horned grasshoppers, taken by the same collectors and in the same territory. Of these latter there are likewise apparently many new forms.

As in the former reports a number of synoptical tables of genera and species are included where it is thought they will materially aid the student in the recognition of these insects.

Family TETRIGIDÆ.

Genus Crimisus Bolivar.

Crimisus Bolivar, Ann. Soc. Ent. Belg., XXXI, p. 246 (1887); Hancock, Genera Ins., fasc. 48, p. 40 (1906); Bruner, Ann. Carnegie Mus., VII, p. 91 (1910).

1. **Crimisus patruus** Bolivar?

Crimisus patruus Bolivar, Ann. Soc. Ent. Belg., XXXI, p. 246 (1887); Hancock, Genera Ins., Fasc. 48, p. 40 (1906).

Habitat.—The present collection contains a single female specimen which is doubtfully referred to this species. It bears the label "Chapada (village) Matto Grosso, Brazil, March, H. H. Smith."

Genus Sclerotettix Bruner.

Sclerotettix Bruner, Ann. Carnegie Mus., VII, pp. 91, 104 (1910).

2. **Sclerotettix steinbachi** sp. nov.

This insect is intermediate between *tibialis* and *variegatus* in size and general appearance, but when viewed with a magnifying glass it exhibits a number of points of difference. Wings only slightly surpassing the apex of the pronotum, which is conspicuously extended beyond the tips of the hind femora.

Of medium size, the body a little depressed and with the surface strongly and closely granulose, on the disk and sides of pronotum also quite conspicuously rugoso-nodulose. Median carina of the pronotum visible throughout, but not especially prominent even in front, plainly undulate behind the shoulders; lateral carinæ not prominent as in *tibialis;* lower lateral margins of the pronotum gently turned outwards, rounded. Head rather narrow and embraced by the front part of the thorax almost to the prominent eyes; vertex a little narrower than one of the eyes viewed from above, viewed laterally not quite reaching the anterior margin of the eyes, quite strongly and broadly sulcate, the surface conspicuously granulose, the median longitudinal carina conspicuous and continuous with the upper end of the frontal costa; antero-lateral carinæ also prominent, arcuate and reaching nearly (♀) or quite (♂) to the middle of the inner margin of the eyes; frontal costa arcuately prominent between the antennæ, suddenly lowered above towards the fastigium, sulcate and quite strongly and evenly divergent below. Pronotum with two very coarse and deep transverse sulci, between which the median carina is most prominent; lateral carinæ in advance of the transverse sulci fairly prominent, cristate, gently convergent posteriorly, back of the sulci less prominent; disk gently convex anteriad, plane caudad. Middle femora clypeate, a trifle more than one and one-half times as long as the greatest width, the lower carina quite prominent and with its edge only gently undulate, the upper carina terminating in a broad tooth. Hind femora robust and moderately elongate, the outer disk occupying only about half of the lateral field and provided with about six prominent very oblique and several nodose rugæ; the hind tibiæ heavy, noticeably dilated apically and furnished with a few strong irregularly arranged tooth-like spines.

General color dark fuscous above, varied on front, on the disk between lateral carinæ in front, on sides of pronotum in advance of tegmina, on anterior and middle legs, and on the base and external disk of hind femora and hind tibiæ with pale testaceous; lower sulcus and outer portion of hind femora below the outer disk mostly black; tibiæ annulated with fuscous; antennæ infuscated, faintly annulate with pallid; venter varied with pallid.

Length of body, ♂, 6.5 mm., ♀, 8 mm.; of pronotum, ♂, 9 mm., ♀, 11 mm.; of hind femora, ♂, 4.75 mm., ♀, 5.65 mm.

Habitat.—Puerto Suarez, Bolivia, one ♂ and one ♀ taken during November, 1908, to January, 1909, at an elevation of 150 meters above sea-level by J. Steinbach. Types in Carnegie Museum, Pittsburgh.

Genus METRODORA Bolivar.

Metrodora BOLIVAR, Ann. Soc. Ent. Belg., XXXI, pp. 247, 248 (1887)—in part; HANCOCK, Genera Ins., fasc. 48, p. 41 (1906); BRUNER, Ann. Carnegie Mus., VII, pp. 91, 109 (1910).

3. **Metrodora lutosa** Bolivar?

Metrodora lutosa BOLIVAR, Ann. Soc. Ent. Belg., XXXI, p. 248 (1887); HANCOCK, Genera Ins., fasc. 48, p. 41 (1906).

Habitat.—A single imperfect female specimen of the genus is referred to Bolivar's species *lutosa*. It was taken at Rio de Janeiro and bears the accession number 2966.

Genus ALLOTETTIX Hancock.

Allotettix HANCOCK, Ent. News, X, p. 276 (1899); MORSE, Biol. Cent.-Amer., Orthopt., II, p. 12 (1900); BRUNER, Ann. Carnegie Mus., VII, pp. 91, 114 (1910).

4. **Allotettix chapadensis** Bruner.

Allotettix chapadensis BRUNER, Ann. Carnegie Mus., VII, p. 117 (1910).

Habitat.—Puerto Suarez, Bolivia, at an elevation of 150 meters above sea-level. A single specimen was collected during the month of November, 1909, by J. Steinbach.

5. **Allotettix bolivianus** sp. nov.

Most nearly related to *Allotettix cayennensis* Bolivar and *A. chapadensis* Bruner, but differing from both of them in several respects, as will be seen by a reference to the subjoined synoptical table and a comparison of the descriptions of the three species.

Body very coarsely rugose and strongly granulose; viewed laterally the median carina of pronotum markedly undulate nearly to the tip of the abdomen, viewed from above the disk between the shoulders in nowise transversely wrinkled or marked with well-defined rows of granuli as in *chapadensis*. Occiput gently embraced by the pronotum, strongly rugoso-granulose, the vertex a little depressed and provided with a coarse median longitudinal carina, which reaches from a point even with the hind margin of the prominent eyes and projects beyond their front margin; frontal costa prominent, evenly rounded, the sulcation beginning a little below the fastigium, to which this portion is connected by a downwardly directed straight ridge. Antennæ arising on a line drawn between the lower edge of the eyes. Hind femora rather coarsely nodulose externally above; the tibiæ about normal, six-spined externally. Median femora with the lower carina rather strongly undulate, about two and three-fourths times as long as wide.

General color fuscous, the tibiæ, mouth-parts, and under side somewhat modified with testaceous. The disk of pronotum marked on each side between the tegmina by an oblique, narrow, ferruginous band.

Length of body, ♀, 6.75 mm., of pronotum, 11 mm., of hind femora, 4 mm., total length, 13.5 mm.

Habitat.—The type, a female, is labeled "Puerto Suarez, Bolivia, 150 M., Nov., 1908–January, 1909." It was collected by J. Steinbach, and is deposited in the Carnegie Museum.

The collection also contains a male specimen similarly labeled, but approaching more closely to a female bearing the label *Allotettix chapadensis* with Chapada as a habitat. Undoubtedly the two forms are rather closely related.

Genus MITRITETTIX Hancock.

Mitritettix HANCOCK, Genera Ins., fasc. 48, p. 57, footnote (1906); BRUNER, Ann. Carnegie Mus., VII, pp. 91, 118 (1910).

Mitraria BOLIVAR (*nec* Rafinesque), Ann. Soc. Ent. Belg., XXXI, p. 253 (1887).

6. **Mitritettix productus** (Bolivar).

Mitraria producta BOLIVAR, Ann. Soc. Ent. Belg., XXXI, p. 253 (1887).

Mitritettix productus HANCOCK, Genera Ins., fasc. 48, p. 57, footnote (1906).

Habitat.—A single female specimen of this insect is at hand. It was taken at Santarem, Brazil, during July, and bears the accession number 2966.

Genus PARATETTIX Bolivar.

Paratettix BOLIVAR, Ann. Soc. Ent. Belg., XXXI, p. 240 (1887); HANCOCK, Genera Ins., fasc. 48, p. 55 (1906).

7. **Paratettix borellii** Giglio-Tos.

Paratettix borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 28 (1897); HANCOCK, Genera Ins., fasc. 48, p. 56 (1906).

Habitat.—There is a male specimen of the genus at hand that is referred to Giglio-Tos' species *borelli*. It comes from Puerto Suarez, Bolivia, and was taken by J. Steinbach during the month of November at an elevation of 150 meters above sea level.

Genus PROTOTETTIX Bolivar.

Prototettix BOLIVAR, Ann. Soc. Ent. Belg., XXXI, p. 255 (1887); HANCOCK, Genera Ins., fasc. 48, p. 65 (1906).

8. **Prototettix fossulatus** Bolivar.

Prototettix fossulatus BOLIVAR, Ann. Soc. Ent. Belg., XXXI, p. 256 (1887).

Habitat.—Only a single male example is at hand from Chapada, Matto Grosso, Brazil.

Genus TETTIGIDEA Scudder.

Tettigidea SCUDDER, Bost. Journ. Nat. Hist., VIII, p. 476 (1862); BOLIVAR, Ann. Soc. Ent. Belg., XXXI, p. 290 (1887); HANCOCK, Tettig. N. A., pp. 138–161, Pl. X, (1902); IB., Genera Ins., fasc. 48, p. 67 (1906); BRUNER, Ann. Carnegie Mus., VII, pp. 92, 123 (1910).

9. **Tettigidea granulosa** sp. nov.

An insect of about the size and general appearance of *T. chapadensis*, but differing from that insect in its slightly more robust form, more coarsely granulose pronotum, and in having the pallid marking on the tegmina circular instead of oblique. There are also other differences as may be noted by the following brief characterization.

Insect viewed laterally very straight above, the dorsum of pronotum showing scarcely a trace of undulation. Head rather deep up and down, embraced by the pronotum to the hind margin of the eyes; the latter prominent, but not large. the top of head between them very perceptibly undulate and with its surface closely granulated; antennæ rather long and slender; frontal costa viewed in profile evenly rounded above the ocellus and deeply sulcate to the very top; vertex a very little advanced beyond the anterior edge of the eyes. Hind femora a little passing the tip of valves of ovipositor, moderately robust. The pronotum extending past the femora and the wings longer than the pronotum.

General color dark fuliginous, with faint indications of pallid markings on the hind femora and the apical portion of the pronotum; the posterior femora with a rather broad subbasal pale annulus, and the anterior and middle legs faintly annulated. Venter together with the lower valves of the ovipositor pallid.

Length of body, ♀, 11 mm., of pronotum, 12.25 mm., of hind femora, 7.5 mm.

Habitat.—One female specimen labeled "Sta. Cruz de la Sierra, Bolivia, 450 m., J. Steinbach" is at hand. This type is in the Carnegie Museum.

10. **Tettigidea gracilicornis** Bruner.

Tettigidea gracilicornis BRUNER, Ann. Carnegie Mus., VII, pp. 125, 128 (1910).

Habitat.—The single male specimen at hand was collected by J. Steinbach during the month of November, 1909, at Puerto Suarez. It was found at an elevation of 150 meters above sea-level.

11. **Tettigidea chapadensis** Bruner.

Tettigidea chapadensis BRUNER, Ann. Carnegie Mus., VII, pp. 125, 130 (1910).

Habitat.—Likewise only a single male. It comes from Chapada, Brazil, and bears the accession number 2966.

12. **Tettigidea costalis** Bruner.

Tettigidea costalis BRUNER, Ann. Carnegie Mus., VII, pp. 126, 133 (1910).

Habitat.—This species is also represented by a single male specimen. It was collected by J. D. Haseman at Saõ Luiz da Caceres, Matto Grosso, Brazil, during the month of May, 1909.

Genus SCARIA Bolivar.

Scaria BOLIVAR, Ann. Soc. Ent. Belg., XXXI, p. 301 (1887); HANCOCK, Genera Ins., fasc. 48, p. 69 (1906); BRUNER, Ann. Carnegie Mus., VII, p. 140 (1910).

13. **Scaria producta** Hancock.

Scaria producta HANCOCK, Genera Ins., fasc. 48, p. 70 (1906).

Habitat.—The single male specimen at hand comes from Santarem, Brazil. It is a representative of accession number 2966.

Genus PAUROTARSUS Hancock.

Paurotarsus HANCOCK, Psyche, IX, p. 42 (1900); IB., Genera Ins., fasc. 48, pp. 70–71 (1906); BRUNER, Ann. Carnegie Mus., VII, p. 142 (1910).

14. **Paurotarsus amazonus** Hancock.

Paurotarsus amazonus HANCOCK, Psyche, IX, pp. 42–43, figs. 1*a*–1*d* (1910); IB., Genera Ins., fasc. 48, p. 71, fig. 26 (1906).

Habitat.—The only specimen at hand, a female, was collected by J. D. Haseman. It bears the label "Rio Machupo, near Rio Guaporé, Bolivia," and was taken August 29, 1909.

Family EUMASTACIDÆ.

Genus SCIRTOMASTAX Saussure.

Scirtomastax SAUSSURE, Rev. Suisse de Zool., XI, p. 97 (1903); BURR, M., Genera Ins., fasc. 15, p. 16 (1903).

This tropical American genus of locusts was erected by Dr. Henri de Saussure for the reception of an apterous Eumastacid coming from Ecuador. Later Dr. Malcolm Burr referred two others there, viz. *Eumastax surinama* and *E. rosenbergi*. Now a single female representative of what would seem to be a fourth species is at hand from eastern Brazil. These insects may be separated by the annexed table.

SYNOPSIS OF THE SPECIES OF SCIRTOMASTAX.

A. Entirely apterous.
  b. Brownish or testaceous. Antennæ black; sides of head black with post-ocular yellow band .... *cordilleræ* Saussure.
  bb. Olivaceous. Antennæ pallid; sides of head concolorous and without the yellow band back of eyes .... *brasiliensis* sp. nov.
AA. Tegmina present but rudimentary. Wings wanting.
  b. Color entirely fuscous. Pronotum behind gently triangulately emarginate, the median carina present .... *surinama* Burr.
  bb. Color fuscous, but with the pronotum ferruginous. The latter behind roundly emarginate, its median carina absent .... *rosenbergi* Burr.

15. **Scirtomastax brasiliensis** sp. nov.

Entirely apterous. Most nearly related to *S. cordilleræ* Saussure, but differing from that insect slightly in dimensions and quite markedly in color.

Insect fairly slender. Head large; vertex subangulate, a little advanced beyond the upper extremity of the eyes; frontal costa sulcate throughout, of about equal width at upper and lower extremities and at the ocellus, but narrowed between, the lateral walls of equal prominence throughout. Antennæ robust, clavate, a little shorter than the anterior femora, pallid throughout as compared to black. Rest of insect as characterized for the genus. Hind tibiæ numerously spined, ranging from 21 to 25 on both margins, the inner row much larger and alternating in size.

General color above brownish olive, below together with the face, lower margins of the pronotum, and legs, greenish yellow. Hind femora with apical portion fasciate with fuscous, the longitudinal carinæ minutely serrate, infuscated.

Length of body, ♀, 20 mm., of hind femora, 12.5 mm.

Habitat.—Rio Sapão, Bahia, Brazil, a single female, where it was taken January 30, 1908, by J. D. Haseman. The type is in the Carnegie Museum.

Family PROSCOPIDÆ.

The locusts which comprise the present family, with a single exception, *Taxiarchus septentrionalis* Bruner from Costa Rica, Central America, are confined to the South American continent, where the various representatives are to be found from the Isthmus of Panama to middle Argentina and Chile, and from the Atlantic to the Pacific oceans. As a group these insects are very distinct from all other locusts, but possibly bear the nearest resemblance to some of the representatives of the Eumastacidæ, which latter family is also represented to a limited degree over the same territory. The general body structure of the Proscopidæ is more nearly that of some of the slenderer apterous Phasmoidea than of other locusts. None of them are fully winged, and representatives of but two genera, so far as at present known, viz: *Anchotatus* and *Astroma*, exhibit traces of these organs.

The material contained in the collections now being studied and which forms the basis of the present paper represents several genera and nearly a score of species. Three of these, and possibly a fourth, seem to be new to science and are described herewith.

In the separation of these insects no single set of characters thus far employed by the various authors who have studied them seem to be entirely dependable. Vertex characters, length of antennæ, and of the basal joint of these organs, comparative form and prominence of the eyes, form of head, the characters on the pronotum, and position of the anterior legs, hind tibiæ and their spine characters and number, —all of these seem to vary so much from the rule as laid down for the several genera and species that they hardly prove satisfactory diagnostic characters.

Another thing, which adds somewhat to the confusion of the student of these insects, is the fact that some individuals of the same species become imagoes with their fourth molt, while others go through an additional molt, which results in a much larger, but not necessarily more mature-looking individual. Frequently the spines on the two margins of the hind tibiæ of a single individual may vary a dozen or even more as to number.

In their food-habits these insects seem to be general feeders, although when better known it may be ascertained that some of the genera and species prefer special plants.

For the convenience of future students of the family the annexed synoptical key of genera has been translated and modified from Brunner von Wattenwyl (Verh. d. k. k. Zool.-Bot. Gesell. in Wien, 1890) who was the first and only entomologist who attempted a monographic revision of the family. Possibly at some future date the present writer may attempt another revision of the group, provided a sufficient amount of material can be secured to form the basis of such a study.

SYNOPSIS OF THE GENERA OF PROSCOPIDÆ.

A. Tarsi provided with a pulvillus. Claws simple, acuminate. Rudimentary wings wanting (except in the genus *Anchotata*).
  b. Pronotum cylindrical, not separated from the prosternum.
    c. Antennæ in both sexes twice as long as the rostrum, the first joint being about equal to the eyes in length. (Posterior tibiæ above, internally 13–20-spined, externally provided with an apical spine.) *Prosarthria* Brunner.
    cc. Antennæ a little longer than the rostrum, or in the female shorter than it, the first joint about one-half the length of the eyes.
      d. Posterior tibiæ above without an apical spine on the inner margin. Anterior legs inserted at or near the middle of the pronotum.
        e. Posterior tibiæ above provided with an apical spine on the outer margin.
          f. Rostrum in both sexes straight. Anterior legs inserted in the middle, or slightly in advance of the middle, of the pronotum. Posterior femora moderately robust. *Proscopia* Klug.
          ff. Rostrum bent downward. Anterior legs inserted a trifle back of the middle of the pronotum. Posterior femora at base very robust...... *Apioscelis* Brunner.
        ee. Posterior tibiæ above without an apical spine on the external margin.
          f. Posterior tibiæ entirely unarmed below. Rostrum in the

male about one-half the length of the eyes. Eyes globose. First joint of the antennæ less than one-fourth of the length of the eyes. Last ventral segment of the male abdomen obtuse. . *Corynorhynchus* Brunner.

ff. Posterior tibiæ below armed towards the apex with some spines. Rostrum in the male longer than the eyes. Eyes depressed. First joint of the antennæ not less than one-third the length of the eyes. Last ventral segment of the male abdomen more or less produced. *Tetanorhynchus* Brunner.

dd. Posterior tibiæ above provided on the inner margin with an apical spine. Front legs inserted on the anterior third of the pronotum. Posterior tibiæ furnished externally with an apical spine. First joint of the antennæ less than one-fourth the length of the eyes. . . . . *Stiphra* Brunner.

bb. Pronotum more or less depressed, separated from the sternum by a longitudinal suture.

c. Head in advance of the mouth subconstricted, the front viewed from the side sinuate. Pronotum with its anterior margin subdilated. Posterior tibiæ provided on the outer margin with an apical spine. Last ventral segment of male abdomen not produced.

d. Pronotum almost twice the length of the head. Mesopleura dentate. Posterior tibiæ entirely unarmed below. *Taxiarchus* Brunner.

dd. Pronotum a little more than one-half longer than the head. Mesopleura entire.

e. Meso- and meta-notum divided. Posterior tibiæ above provided with an apical spine on the inner margin, below spined towards the apex or unarmed.

f. Rudimentary wings present in the female. Rostrum porrect, as long as the rest of the head, or a little shorter. Posterior femora above with the apical margins obtuse. *Anchotatus* Brunner.

ff. Rudimentary wings wanting. Rostrum decurved, either longer or shorter than the eyes. Posterior femora with both margins normally produced into a spine. *Epigrypa* Brunner.

ee. Meso- and meta-notum, although the median segment is not divided, strongly dilated. Posterior tibiæ above on both margins without apical spines, below unarmed. *Hybusa* Erichson.

cc. Head gradually acuminate, the front viewed from the side straight. Pronotum with the anterior margin not dilated. Posterior tibiæ above with both margins lacking apical spines (below spined towards the apex). Subgenital plate of male abdomen lengthily produced. (Posterior femora with the terminal margins obtuse. Form very slender.) . . . . *Cephalocœma* Brunner.

AA. Tarsi without pulvillus, the claws compressed, their base and apex of equal width, the apex of which is provided with a deflexed point. Rudimentary wings present in the female........................*Astroma* Charpentier.

Genus CORYNORHYNCHUS Brunner.

Corynorhynchus BRUNNER, Verh. der k. k. Zool.-Bot. Ges. in Wien, XXXIX, p. 101 (1890).

This genus was erected to contain several species of walking-stick-like locusts that occur in Brazil. They differ from other representatives of the family in that the females have the rostrum of the vertex more or less clavate. At least five species have thus far been recognized.

16. **Corynorhynchus radula** (Klug).

Proscopia radula KLUG, Horæ Phys. Berol., p. 20, No. 4, pl. 3, fig. 4 (1820); BURMEISTER, Handb. Ent., II, p. 604, No. 3 (1838).

Corynorhynchus radula BRUNNER, Monogr. Proscop., p. 16, fig. 4*a–e* (1890).

Proscopia ruficornis KLUG, Horæ Phys. Berol., p. 24, pl. IV, fig. 11 (1820).

Habitat.—There are several specimens in the collection, which are placed here, both sexes being represented. They were collected at Rio de Janeiro.

Another male specimen of this genus was taken at Chapada, near Matto Grosso, Brazil. This latter may belong to a distinct species, since it is considerably larger, being all of 80 mm. in length.

Two of the females also may belong elsewhere, since the apex of their rostrum is somewhat differently shaped from that of typical specimens of *radula* as figured by Brunner in his monograph of the family.

Genus TETANORHYNCHUS Brunner.

Tetanorhynchus BRUNNER V. WATTENWYL, Verh. d. k. k. Zool.-Bot. Ges. in Wien, XXXIX, pp. 92, 104 (1890); GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 18 (1897); REHN, Proc. Acad. Nat. Sci. Phil., 1904, p. 677.

The genus *Tetanorhynchus* was erected by Carl Brunner von Wattenwyl to contain certain forms of the slender, apterous, stick-like locusts, which occur chiefly in tropical South America east of the Andes Mountains and between the Amazons and the northern regions of the Argentine Republic. As stated in my remarks introductory to the family Proscopidæ all of these insects are rather variable in their characters. The genera as well as the species, as at present understood, cannot be definitely separated by the characters which have been chosen for that purpose. Brunner von Wattenwyl included six species, Giglio-Tos added two others, while Rehn described two more. The material now being studied likewise seems to contain two additional forms which can best be placed in the genus *Tetanorhynchus.*

As stated by Brunner von Wattenwyl the representatives of this genus bear a strong resemblance to those of *Cephalocœma* Burmeister, and differ in some of its representatives only in the separation of the dorsal and ventral portions of the pronotum by a well-defined, continuous, longitudinal groove on each side. As shown in the description of *T. gracilis*, which follows, even this character is not permanent, for occasional individuals occur, in which there is a complete separation of these parts. This character seems to be one which, to a certain extent at least, belongs more frequently to immature than to mature individuals. There are at hand two nymphs of one of these insects from Puerto Suarez, Bolivia, which in all other characters are *Tetanorhynchus*, but in which the separation is as complete as in any *Cephalocœma.*

Additional forms undoubtedly occur over the vast region which seems to be their home. Being entirely apterous and possibly also more or less closely confined to certain host plants, as well as regions determined by climatic conditions and surface configuration, careful collecting and study will no doubt result in a much better knowledge of the family as a whole, and also to the addition of many new forms. The annexed synoptical key will aid the student in the separation of the dozen recognized species of *Tetanorhynchus:*

SYNOPSIS OF THE SPECIES OF TETANORHYNCHUS.

A. Rostrum of the vertex of female shorter or at least no longer than the remainder of the head. (The posterior tibiæ above on the inner margin with not more than 20 or 21 spines.)

  b. Rostrum of the vertex of the female much longer than one-half of the remainder of the head. Posterior tibiæ below on the outer margin spined towards the apex.

    c. Rostrum of the female with all the carinæ prominent, viewed from the front cruciform or cross-shaped. (Posterior tibiæ above on the inner margin 10–11 spined. Subgenital plate but little produced.) *punctatus* Klug.

    cc. Rostrum of the female with the carinæ, especially the lower ones, less prominent, viewed from the front quadrate or lamellate. (Posterior tibiæ above on the inner margin variously spined.)

      d. Form graceful, especially in the males.

e. Rostrum viewed from the front lamellate, the upper carinæ much more prominent than the lower ones. Margins of hind tibiæ about 20-spined......*sublævis* Brunner.

ee. Rostrum viewed from the front quadrate, the carinæ of nearly equal prominence.

f. Apex of the rostrum more or less acuminate.

g. Rostrum with its carinæ crenulate. Hind tibiæ of female internally 15–17-spined, externally 19-spined..................*propinquus* Brunner.

gg. Rostrum with its carinæ smooth. Hind tibiæ of the male 15–16-spined, of female 20-spined. *bihastatus* Rehn.

ff. Apex of rostrum blunt.

g. Rostrum of the male vertex longer (4–6 mm.). Hind tibiæ with fewer spines (10–15 in number).

h. Size larger (♂, 68–83 mm., ♀, 92–115 mm.). Hind tibiæ with 11–15 spines on both margins. *humilis* Giglio-Tos.

hh. Size smaller (♂, 65 mm., ♀, 90 mm.). Hind tibiæ 10–12-spined on both margins. *gracilis* sp. nov.

gg. Rostrum of the male vertex shorter (2.65 mm.). Hind tibiæ with more spines (20–21 in number). *curtirostris* sp. nov.

dd. Form of male robust, body glabrous. Anterior and middle femora heavy.....................................*smithi* Rehn.

bb. Rostrum of the female but little longer than one-half of the remainder of head. Posterior tibiæ below entirely unarmed......*incertus* Brunner.

AA. Rostrum of the vertex of the female longer than the remainder of the head. (The posterior tibiæ above on the inner margin sometimes with more than 20 spines.)

b. Pronotum densely granulate. Posterior tibiæ above armed internally with 24 spines....................................*longirostris* Brunner.

bb. Pronotum impress-punctate. Posterior tibiæ above armed internally with from 13 to 22 spines.

c. Smaller (♀, 80 mm. long). Rostrum towards the apex attenuate, the apex obtuse. Posterior tibiæ both internally and externally 13-spined...................................*angustirostris* Brunner.

cc. Larger (♀, 124–138 mm. long). Rostrum with the apex strongly clavate. Posterior tibiæ internally and externally 14–22-spined. Subgenital plate of male compressed, a little shorter than the rostrum, acuminate................................*borelli* Giglio-Tos.

17. **Tetanorhynchus punctatus** (Klug).

Proscopia punctata KLUG, Horæ Phys. Berol., p. 19, No. 3, pl. 3, fig. 3 (1820); BURMEISTER, Handb. Ent., II, p. 604, No. 5 (1838).

Tetanorhynchus punctatus BRUNNER, Verh. Zool.-Bot. Ges. Wien, XL, pp. 104, 105, pl. 4, figs. 5*d–e* (1890).

Proscopia subparallela WALKER, Cat. Dermapt. Salt. Brit. Mus., III, p. 489, No. 24 (1870).

♂ *Proscopia acuminata* KLUG, Horæ Phys. Berol., p. 23, No. 10, pl. 4, fig. 10 (1820); BURMEISTER, Handb. Ent., II, p. 605, No. 10 (1838).

Nymph. *Proscopia striata* KLUG, l. c., p. 23, No. 9, pl. 4, fig. 9 (1820); BURMEISTER, l. c., p. 605, No. 9 (1838).

Habitat.—A single male taken at Corumbá is referred here. It was collected by H. H. Smith during the month of April.

In size and general appearance this insect resembles the males labeled as *T. sublævis* from the same locality.

18. **Tetanorhynchus sublævis** Brunner.

Tetanorhynchus sublævis BRUNNER, Verh. Zool.-Bot. Ges. Wien, XL, p. 105, No. 2; pl. 4, figs. 5*a–c* (1890); KIRBY, Syn. Cat. Orthopt., III, p. 86 (1910).

Habitat.—Corumbá, Brazil, two males, collected during March and April by H. H. Smith. These specimens are very similar to those coming from the same locality and determined as *propinquus* and *punctatus*. The latter, however, has the rostrum decidedly shorter.

19. **Tetanorhynchus propinquus** Brunner.

Tetanorhynchus propinquus BRUNNER, Verh. Zool.-Bot. Ges. Wien, XL, pp. 105, 106, No. 3 (1890); KIRBY, Syn. Cat. Orthopt., III, p. 86 (1910).

Habitat.—Six males taken by H. H. Smith at Corumbá, Brazil, are referred to this species on account of the number of spines on the hind tibiæ. They also were taken in March and April.

It is a difficult matter to determine just which of the opposite sexes belong together in this genus, unless collected *in coitu*.

20. **Tetanorhynchus bihastatus** Rehn.

Tetanorhynchus bihastatus REHN, Proc. Acad. Nat. Sci. Phil., LVI, p. 677 (1905); KIRBY, Syn. Cat. Orthopt., III, p. 86 (1910).

Habitat.—Five females coming from Corumbá, Brazil, are referred to Rehn's *T. bihastatus*. They also were collected by H. H. Smith during March and April.

21. **Tetanorhynchus humilis** Giglio-Tos.

Tetanorhynchus humilis GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 18 (1897); KIRBY, Syn. Cat. Orthopt., III, p. 86 (1910).

Habitat.—Two males and two females of this genus are at hand, which seem to fit Giglio-Tos' description of *T. humilis.* The males come from Santa Cruz de la Sierra, Bolivia, where they were collected at an elevation of four hundred and fifty meters above sea-level by J. Steinbach. The females were collected at Puerto Suarez, Bolivia, during November by the same person.

22. **Tetanorhynchus gracilis** sp. nov.

In size very similar to *T. longicornis,* described in the present paper, but differing from it in the slightly more robust stature and the longer rostrum of the vertex and much shorter antennæ and subgenital plate. Like that insect the present species also shows marked *Cephalocœma* characteristics. In fact one specimen has the sternum distinctly separated from the pronotum, but otherwise does not differ from the other individuals now being studied.

Head coarsely punctulate, gently constricted slightly behind the depressed eyes, the occiput quite noticeably canaliculate at middle back of the eyes, between them carinated. Rostrum quadrate, evenly tapering, as high as wide, gently depressed, the angles bluntly carinated; above convex at base, sulcate apically, at sides basally with a heavy longitudinal carina that gradually tapers towards the apex. Frontal costa inconspicuous, somewhat similar to that of *longicornis.* Sides of head rounded, without angles or carina. Antennæ about one-fourth shorter than the rostrum, the basal joint a trifle over a third the length of the eyes. Pronotum subcylindrical, rather strongly punctured, the surface somewhat glabrous, in the middle scarcely carinated, but with a narrow space free from punctulation. Abdomen with the basal joint punctulate, smooth beyond and the apical segments faintly 5-carinate as in *T. longicornis* and several of the species of *Cephalocœma.* Last ventral segment or subgenital plate compressed, acuminate, and canaliculate above, the lower middle strongly carinated, but the sides scarcely so. Supra-anal plate short, roundly triangular. Legs slender. Hind tibiæ 10–12-spined. General color olive-green, more or less testaceous below.

Length of body, ♂, about 65 mm., of head, 12 mm., of rostrum, 4.5–6 mm., of pronotum, 12 mm., of anterior femora, 8 mm., of hind femora, 20 mm., of hind tibiæ, 20 mm., of subgenital plate, 4 mm.

Length of body, ♀, (?) 90 mm., of head, 14 mm., of rostrum, 5.5–6.5 mm., of pronotum, 16.5 mm., of anterior femora, 13 mm., of hind femora, 29 mm., of hind tibiæ, 31 mm.

Habitat.—There are several specimens of the male at hand that come from Chapada, near Cuyaba, Matto Grosso, Brazil, also a couple of males that were taken at Corumbá, Brazil, H. H. Smith collector. The type is the property of the Carnegie Museum.

There are several female specimens before me which may belong with the male described above. They were taken at Corumbá, as were also some of the males. They are placed here with some doubt because of the greater number of tibial spines (19–21) and the different style of pronotal punctulation (variolose). Otherwise the rostrum and antennal characters agree with those of the males. The measurements of one of these females is given above.

23. **Tetanorhynchus longicornis** sp. nov.

This insect is unusually slender so far at least as the male is concerned. It may be recognized from the other species of the genus by the extreme length of the antennæ, which are fully one-half longer than the rostrum of the vertex. Subgenital plate long, acuminate, and with its sides fairly strongly compressed, prominently carinated below and at middle of sides, the upper edges margined.

Head long and slender, evenly narrowing from base to the eyes, viewed in profile the front is but little sinuate; the occiput moderately transversely rugulose, provided with a low blunt median longitudinal and two supplementary lateral (one on each side) carinæ. Sides of head also provided with a strong rounded carina that extends from the outer margin of the base of the clypeus to the back edge of the eyes; frontal costa prominent throughout as a rounded ridge or carina, the upper end of which branches at the ocellus and gradually fades away between the heavy anterior borders of the eyes. Rostrum quadrate, transversely wedge-shaped, about one-third longer than the depressed eyes, gently tapering and with the apex rounded, the lateral margins both above and below coarsely carinated, the upper disk convex and somewhat transversely rugose, lower disk flattened or gently sulcate, smooth; the outer sides sulcate and provided with a slender median carina that extends two-thirds of its length. Eyes strongly depressed, a little more than twice as long as broad. Antennæ elongate, fully twice the length of the rostrum, the basal joint one-half the length of the eyes. Pronotum sub-depressed, not separated from the sternum by lateral grooves, the surface rather profusely and finely punctulate, near the middle of the dorsum somewhat transversely so, the middle provided with a fairly conspicuous percurrent carina. Abdomen apically above dimly 5-carinate as in some of the species of *Cephalocœma*. Supra-anal plate short, bluntly rounded at apex; subgenital plate as described above. Legs slender. Margins of hind tibiæ 20–21-spined.

General color dark olive-brown, with the lateral margins of the head and prothorax flavous. Legs and underside testaceous.

Length of body, ♂, 64 mm., of head above, 10.5 mm., of rostrum, 2.65 mm., of pronotum, 12.5 mm., of anterior femora, 9 mm., of hind femora, 22 mm., of hind tibiæ, 22 mm., of subgenital plate, 6 mm.

Habitat.—A single male, the type, is at hand. It was collected by J. D. Haseman at Formosa, Bahia, Brazil, February 15th, 1908. The type is deposited in the Carnegie Museum.

This insect in some of its characters approaches the genus *Cephalocœma*, but in others certainly is distinctly a *Tetanorhynchus*.

24. **Tetanorhynchus smithi** Rehn.

Tetanorhynchus smithi REHN, Proc. Acad. Nat. Sci. Phila., LVI, p. 678 (1904); KIRBY, Syn. Cat. Orthopt., III, p. 86 (1910).

Habitat.—The present species is represented by at least eight male specimens, which come from Corumbá, Brazil, where they were collected by H. H. Smith during March and April. There are also at hand three females from the same locality and bearing similar dates which I am inclined to label *smithi*, although they are comparatively small and slender (85–88 mm. long) to go with the males. Possibly these may be "subimagoes" or individuals which have matured with the fourth instead of the fifth molt, as mentioned on a former page of this paper.

25. **Tetanorhynchus incertus** Brunner.

Tetanorhynchus incertus BRUNNER, Verh. Zool.-Bot. Ges. Wien, XL, 105, 106, No. 4 (1890); KIRBY, Syn. Cat. Orthopt., III, p. 86 (1910).

Habitat.—There is a single female specimen of this insect at hand which H. H. Smith took during October. It comes from Rio de Janeiro.

As Brunner von Wattenwyl suggests, this insect has some characteristics of *Corynorhynchus* as well as of the present genus.

Genus CEPHALOCŒMA Serville.

Cephalocœma SERVILLE, Ins., Orthopt., p. 577 (1839); BURMEISTER, Abhandl. Ges. Halle, XV, p. 3 (1880); BRUNNER, Verh. Zool.-Bot. Ges. Wien, XL, pp. 93, 114 (1890); GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, pp. 19–21 (1894).

The locusts referred to this genus belong to South America and are found between the equator and about 36° south latitude. They differ from the species of *Tetanorhynchus* and *Corynorhynchus* chiefly in having the sternum of the prothorax separated from the dorsal portion by well-defined lateral, longitudinal sulci, and in the front being straight rather than sinuose. About twenty species have been described thus far.

26. **Cephalocœma costulata** Burmeister.

Cephalocœma costulata BURMEISTER, Abhandl. Naturf. Ges. Halle, XV, p. 9, No. 3 pl. 1, figs. 3–7 (1880); BRUNNER, Verh. Zool.-Bot. Ges. Wien, XL, pp. 115, 116 (1890); GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, pp. 19, 20 (1897); BRUNER, Second Rept. Locust Comm. B. Aires, p. 20, pl. 6 (1900); IB., Proc. U. S. Nat. Mus., XXX, p. 619, pl. 36, fig. 1 (1906).

Habitat.—Chapada and Corumbá, Brazil where the dozen or more specimens were taken from April to September inclusive by H. H. Smith. Most of this material is immature.

This seems to be the most abundant as well as most widely distributed species of the genus.

27. **Cephalocœma** sp.?

There is still another species of the genus *Cephalocœma* at hand. It is represented by a single female coming from Chapada, Brazil, where it was taken by H. H. Smith in December. This insect exhibits several of the characteristics described by Rehn in connection with his *Cephalocœma chapadensis* (Proc. Acad. Nat. Sci. Phila., 1904, p. 681). The measurements of the female of *chapadensis* are 75.5 mm. long while the present specimen is 92 mm. long. Rehn's insect had a head 15.5 mm. long while this one has it 16.5 mm. in length. The spine formula for the hind tibiæ is 10–10 in our specimen, while Rehn's is given as 12 externally and 9 or 10 internally. The rostrum of this specimen has the sides parallel, the apex blunt and viewed from in front quadrate, the carinæ rather prominent and cruciate. Its length a little less than the remainder of the head, or 8 mm. In stature this specimen is moderately robust, at least more noticeably so than in *C. costulata* Burmeister. If not *chapadensis* it might be known temporarily as *C. cuyabensis* Bruner.

28. **Cephalocœma calamus** Burmeister.

Cephalocœma calamus BURMEISTER, Abhandl. Ges. Halle, XV, p. 11, No. 4 (1880); BRUNNER, Verh. Zool.-Bot. Ges. Wien, XL, pp. 115, 116, No. 4 (1890).

Habitat.—There are nine specimens at hand which are referred here, some of them doubtfully. They come from Chapada and Corumbá, Brazil, and Puerto Suarez, Bolivia. They were taken during the period from November to April inclusive.

The rostrum in some of the males is apparently broken off at about its middle, but otherwise these individuals do not appear to differ greatly from normal specimens.

29. **Cephalocœma borelli** (Giglio-Tos).

Prosarthria borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 4 (1894).

Cephalocœma borellii GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 19 (1897); KIRBY, Syn. Cat. Orthopt., III, p. 89 (1910).

Habitat.—Three male and three female specimens which were taken at Chapada, near Cuyaba, Matto Grosso, Brazil, are referred here. They were collected by H. H. Smith during the months of June and July.

The female specimens appear to be immature, as they measure but 85 mm. in length instead of 113 mm., as given for this species in the original description.

Genus STIPHRA Brunner.

Stiphra BRUNNER V. WATTENWYL, Verhandl. d. k. k. Zool.-Bot. Ges. Wien, XXXIX, p. 21, fig. 6 (1890).

The insects which comprise the present genus are especially noted for their compactness. Three species have been described heretofore, and now a fourth is added. Their distribution seems to be confined to middle and southern Brazil and eastern Bolivia. The annexed table will assist in their separation.

SYNOPSIS OF THE SPECIES OF STIPHRA.

A. Middle tibiæ on their basal fourth provided with a lobe or expansion. [Metanotum plane. (Rostrum of the female truncate, a little longer than the eyes.) [Bahia, Brazil] .... *lobata* Brunner.

AA. Middle tibiæ on their basal fourth not lobate. Metanotum tuberculately elevated on its posterior margin.

- *b.* Rostrum of female vertex at least twice as long as the eyes; in the male acuminate and longer than the eyes. Metanotum except the marginal tubercle plane. [Prov. Santa Catharina, Brazil]. .*tuberculata* Brunner.
- *bb.* Rostrum of the female vertex not known; of the male truncate, or broadly rounded and shorter than the eyes. Metanotum strongly arched.
  - *c.* Larger (♂, 72 mm.). Vertex truncate. [Bolivia]. .*gibbosa* Guerin.
  - *cc.* Smaller (♂, 48 mm.). Vertex broadly rounded. [Bom Fim, Bahia.] *brevirostris* sp. nov.

30. **Stiphra brevirostris** sp. nov.

Most nearly related to *S. gibbosa* Guerin, from which it differs in its smaller size and much shorter and rounded, instead of truncate, rostrum of the vertex.

Stature moderately robust. Head strongly constricted back of the eyes, nearly or quite as long as the pronotum, somewhat transversely rugose above, smooth elsewhere; the eyes prominent, almost as wide as long, separated above by a space about equal to one-half of their longest diameter; the fastigium of the vertex or rostrum quite strongly depressed, broadly rounded in front, the lateral edges blunt. Occiput longitudinally grooved at middle almost to the back margin of the eyes, and from that point forward extends a blunt carina, which reaches the tip of the rostrum. Antennæ a little more than twice as long as the rostrum, subclavate, the basal joint less than one-fourth as long as the eyes. Pronotum glabrous, transversely rugoso-punctate, the anterior legs arising about one-third its length from the front, anterior margin a little flaring at sides, roundly and widely emarginate at middle; meso- and meta-notum broadly dilated, also punctulate, the latter strongly arched and rugoso-punctulate, provided with a median and two lateral longitudinal ridges on each side of its disk. Abdomen minutely punctulate, rather robust and tapering but little caudad. Last ventral segment short, compressed. Legs short, the anterior and middle pairs very robust apically. Hind tibiæ 13–15-spined externally, 10–12-spined internally.

General color dark olive-green, the legs paler. Antennæ pale at base, black beyond.

Length of body, ♂, 38 mm., of head, 7 mm., of rostrum, 0.9 mm., of pronotum, 6 mm., of anterior femora, 4.75 mm., of hind femora, 13.5 mm.

Habitat.—Bom Fim, Bahia, Brazil, "Fazenda de Amoratu," November 20, 1907, J. D. Haseman collector. The only specimen at hand is the type, a male. It is the property of the Carnegie Museum.

Family TRYXALIDÆ.

This is one of the principal families of locusts in most countries. In South America it comes next to the Cyrtacanthacridæ (Acridiidæ) both in the number of its representatives and their importance economically. In the material here reported upon we find some new forms, including two new genera.

Since no complete synoptic key of these South American genera has heretofore appeared, one, which may be accepted as preliminary, has been prepared, and is now presented.

SYNOPSIS OF THE SOUTH AMERICAN GENERA OF TRYXALIDÆ.

A. Foveolæ of the vertex below or wanting. The face usually very oblique.
- *b*. Antennæ with the joints depressed or flattened, usually more or less decidedly ensiform in one or both sexes.
  - *c*. Wings of male more or less strongly fenestrate on the humeral field.
    - *d*. Sides of the fastigium of the vertex strongly rounded or arcuate, the apex not acuminate. Tegmina acuminate or decidedly obliquely truncate. Posterior femora with the apical angles horizontally produced, acuminate. Head conical, face rather strongly oblique. Foveolæ of the vertex indistinct, triagonal.
      - *e*. Vertex longer than the eyes. Tegmina of the male broader than the length of the pronotum. Wings of the male very broadly fenestrate....*Hyalopteryx* Charpentier.
      - *ee*. Vertex shorter than the eyes. Tegmina of the male narrower than the length of the pronotum. Wings of male less broadly fenestrate.
        - *f*. Tegmina acuminate, the wings tinted with dilute red. Lateral carinæ of the pronotum interrupted. *Eutryxalis* Bruner.
        - *ff*. Tegmina obliquely truncate at apex; wings hyaline and more or less infuscated. Pronotum with the lateral carinæ continuous, uninterrupted.
          - *g*. Larger, general color green......*Truxalis* Linnæus.
          - *gg*. Smaller, general color testaceous or ferruginous. *Orphula* Stål.
    - *dd*. Sides of the fastigium of the vertex straight or but gently rounded, the apex more or less acuminate. Tegmina broadly rounded or but feebly truncated at the apex.
      - *e*. Fastigium of the vertex above depressed or sulcate, without a median longitudinal carina.
        - *f*. Lateral carinæ of the pronotum less prominent than the median, more or less divergent, especially on the metazona; the prozona and metazona about equal in length, the lateral lobes deeper than long.
          - *g*. The lateral carinæ nearly or quite as well developed on the prozona as on the metazona. Eyes more or less truncate in front.
            - *h*. Apical half or two-thirds of tegmina membranous. Antennæ longer.
              - *i*. Tegmina moderately broad, the apex feebly truncated; disk of wings tinged with yellowish.

j. Antennæ with their basal joints depressed, giving to these organs a subensiform appearance. *Parorphula* Bruner.

jj. Antennæ with the joints scarcely or not at all depressed, filiform. *Sisantum* Bruner.

ii. Tegmina narrow, their apex rounded; disk of wings fuscous, the anterior border apically black-banded. *Orphulina* Giglio-Tos.

hh. Apical third only of tegmina membranous; wings clear or but little infuscated. Antennæ shorter.

i. Posterior tibiæ with more (13–14) spines in outer row; tegmina with a decided humeral vitta; eyes rather large, but feebly bulging..... *Parachlœbata* Bruner.

ii. Posterior tibiæ with fewer spines in the outer row (10–11); tegmina without a decided humeral vitta; eyes of moderate size, somewhat bulging. *Orphulella* Giglio-Tos.

gg. Lateral carinæ of pronotum but feebly developed on the prozona when compared with those on the metazona; eyes subglobular, large. *Linoceratium* Bruner.

ff. Lateral carinæ of the pronotum not converging near the middle, almost or quite as prominent as the median, the sides of the pronotum not compressed at middle. Tegmina and wings sometimes, but not always, abbreviated.................... *Dichromorpha* Morse.

ee. Fastigium of the vertex above rounded, provided with a longitudinal median carina.

f. General color dark brown or fuscous varied with testaceous. Wings strongly bordered with fuliginous. Lateral carinæ of pronotum faint and irregular.

g. Wings with the anterior ulnar vein branched at base. Antennæ of male clavate. Humeral field of wings not broadly scalariform or fenestrate. Wings red and black............. *Toxopterus* Bolivar.

gg. Wings with the anterior ulnar vein not branched at base. Humeral field of wing very broadly scalariform or fenestrate. Wings dull orange or sulphurous and black........... *Peruvia* Scudder.

ff. General color green or testaceous. Lateral carinæ of

pronotum prominent, straight. Wings largely hyaline except for the roseate disk.
Cocytotettix Rehn.

cc. Wings of male not fenestrate in humeral field, the radial veins not incrassate. Lateral carinæ parallel or gently divergent to the rear.

d. Pronotum provided with a pair of supplemental carinæ on the disk.
Sinipta Stål

dd. Pronotum without the supplemental carinæ on the disk.
Leurocerus Bruner.

bb. Antennæ filiform. Lateral carinæ of pronotum parallel.
Amblytropidia Stål.

AA. Foveolæ of the vertex visible from above; but sometimes very inconspicuous. Face generally less oblique than in the alternate category.

b. Inner apical spurs of hind tibiæ subequal in length. Antennæ, at least of male, nearly or quite as long as the hind femora.

c. Body robust, apterous or subapterous, somewhat similar in form to the representatives of *Caletes* Brunner. Vertex longitudinally carinate [Galapagos Islands]............*Closteridea* Scudder.

cc. Body provided with wings, of normal form. Vertex not longitudinally carinate. [Not insular in distribution.]

d. Wings colored. Basal joints of antennæ depressed. Tegmina without a trace of an intercalary vein.
{ *Fenestra* Giglio-Tos.
{ *Dichroatettix* Bruner.

dd. Wings hyaline or transparent. Basal joints of the antennæ not depressed. Tegmina provided with a more or less well developed intercalary vein.

e. Foveolæ of the vertex very inconspicuous. Antennæ elongate.

f. Fastigium of the vertex provided with a prominent median longitudinal carina.*Apolobamba* gen. nov.

ff. Fastigium of the vertex without a prominent median longitudinal carina.

g. Pronotum without lateral carinæ or with carinæ that are very widely interrupted in the middle. Insects moderately graceful in form.

h. Valves of the ovipositor short and very blunt [Paraguay]........*Amblyscapheus* Bruner.

hh. Valves of the ovipositor normal in form [Peru]................*Compsacris* Bolivar.

gg. Pronotum provided with well developed lateral carinæ that are usually continuous. Insects more robust in form..*Staurorhectus* Giglio-Tos.

ee. Foveolæ of the vertex distinct. Antennæ shorter.

f. Size of insects larger (♂, 17–18 mm., ♀, 21–22 mm.); form rather robust.

g. Lateral foveolæ of the vertex sublanceolate. Pronotum deplanate above . . . . *Isonyx* Rehn.

gg. Lateral foveolæ of the vertex quadrate. Pronotum rounded above . . . . *Borellia* Rehn.

ff. Size of insects smaller (♂, 12 mm., ♀, 16 mm.). Form more graceful . . . . *Stereotettix* Rehn.

bb. Inner apical spurs of hind tibiæ very unequal in length. Antennæ of neither sex never nearly as long as the hind femora.

c. Lateral foveolæ of the vertex well developed, varying from nearly square to sublinear.

d. Pronotum with the lateral carinæ very inconspicuous or missing, the lateral lobes not ridged.

e. Hind tibiæ with seven spines externally, the inner spur quite straight, much longer than its mate and very similar in form to that of *Scyllina*. Foveolæ three times as long as wide. *Alota* gen. nov.

ee. Hind tibiæ eight-spined externally, the inner spur evenly curved and tapering, about a third longer than its mate. Foveolæ nearly square . . . . *Pellopedon* Bruner.

dd. Pronotum with well developed lateral carinæ and on the lateral lobes raised ridges.

e. Tegmina and wings more or less abbreviated. Fastigium of the vertex provided with a faint median longitudinal carina . . . . *Meloscirtus* Bruner.

ee. Tegmina and wings fully developed. Fastigium of the vertex not carinated longitudinally . . . . *Stirapleura* Scudder.

cc. Lateral foveolæ of the vertex obscure, linear.

d. Larger. Lateral carinæ of the pronotum more or less interrupted between the anterior and posterior sulci; diverging strongly both anteriorly and posteriorly . . . . *Scyllina* Stål.

dd. Smaller. Lateral carinæ but little or not at all interrupted and but little divergent . . . . *Euplectrotettix* Bruner.[1]

Genus TRUXALIS Fabricius.

Truxalis FABRICIUS, Syst. Ent., p. 279 (1775); STAL, Recens. Orthopt., pp. 92, 104 (1873), and others.

31. **Truxalis brevicornis** (Linnæus).

Gryllus brevicornis LINNÆUS, Cent. Ins., *Part*, p. 15 (1763).
Truxalis brevicornis FABRICIUS, Syst. Ent., p. 279 (1775).

Other synonymy is given in a former paper by me (ANNALS CARNEGIE MUS., VIII, p. 9).

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[1] The genus *Tristira* Brunner possibly belongs to this division and somewhere near *Meloscirtus*. This, however, is only a surmise, as no specimen is at hand, and the description does not mention the spur characters.

Habitat.—Specimens are at hand from Bahia, Brazil, and Puerto Suarez, Bolivia. Those coming from the former region (three females) bear the label "Bom Fim (Rio Sapaõ) Bahia, Nov. 10, 1908," and were collected by J. D. Haseman. The other lot (one male and two females) was taken by J. Steinbach during November, 1908, and January, 1909.

Genus ORPHULA Stal.

Orphula STAL, Recens. Orthopt., I, p. 105 (1873); BRUNER, Ann. Carnegie Mus., VIII, p. 9 (1911).

32. **Orphula pagana** (Stål).

Gomphocerus (*Hyalopteryx*) *pagana* STÅL, Freg. Eug. Resa., Ins. Orthopt., p. 339 (1860).

Truxalis (*Orphula*) *pagana* STÅL, Recens. Orthopt., I, p. 106 (1873).

Orphula pagana GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp., Torino, IX, No. 184, p. 9 (1894).

Habitat. The material taken by J. Steinbach at Santa Cruz de la Sierra, Bolivia, contains three males and four females of this insect. There is also a single female collected by J. D. Haseman at Sapucay, Paraguay.

One of the females coming from Sta. Cruz de la Sierra, Bolivia, is dull black throughout.

Genus ORPHULELLA Giglio-Tos.

Orphulella GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, no. 184, p. 10 (1894); SCUDDER, Can. Ent., XXXI, pp. 177-188 (1899); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 31, 74 (1902, 1904); IB., Ann. Carnegie Mus., VIII, pp. 9-20 (1911).

33. **Orphulella** (?) **crassa** Bruner?

Orphulella crassa BRUNER, Ann. Carnegie Mus., VIII, p. 17 (1911).

There is a male specimen at hand which I am inclined to place here. It comes from "Sete Lagoas, Minas Geraes, Brazil," where it was taken on May 3, 1908, by J. D. Haseman. While not quite typical in some respects, it agrees very closely with a male coming from Rio de Janeiro and labeled *O. crassa* by myself, when the types were at hand for comparison.

This species, *O. crassa*, also bears a rather strong resemblance to the insects described by me as *Orphula meridionalis* and *O. guatemalæ*, as well as with the *Oxycoryphus azteca* Saussure. The *Oxycoryphus* *mexicanus* of Saussure is also related. It is quite possible that these insects, along with two or three others, should be placed in a distinct genus, or at least subgenus, under *Orphulella*.

The *Orphula gracilicornis* Bruner (*Ent. News*, XXI, p. 301, July, 1910) which was later referred by J. A. G. Rehn to *Sisantum* (*Ent. News*, XXII, pp. 251–252, June, 1911) might better be placed here also.

34. **Orphulella obscura** Bruner.

Orphulella obscura BRUNER, Proc. U. S. Nat. Mus., XXX, p. 627 (1906); Ann. Carnegie Mus., VIII, pp. 10, 12 (1911).

Habitat.—Rio Sapaõ, Bahia, Brazil, a single female specimen, which was taken on January 30, 1908, by J. D. Haseman.

35. **Orphulella pelidna** (Burmeister)?

Gomphocerus pelidnus BURMEISTER, Handb. Ent., II, p. 650 (1838).
Stenobothrus pelidnus THOMAS, Rept. U. S. Geol. Surv. Terr., V, p. 95 (1873).
Orphula pelidna MCNEILL, Proc. Dav. Acad. Nat. Sci., VI, pp. 235–239 (1897).
Orphulella pelidna SCUDDER, Can. Ent., XXXI, pp. 179, 187 (1899).

Habitat.—The single female specimen at hand bears the label "Blue Hills, Nassau, Bahama Is.—Worthington." A number of records credit it as being indigenous to various of the West Indian Islands.

36. **Orphulella elongata** Bruner.

Orphulella elongata BRUNER, Ann. Carnegie Mus., VIII, pp. 11, 14 (1911).

Habitat.—Two females and three males are before me, which were collected at Puerto Suarez, Bolivia, by J. Steinbach, and a single female, which comes from Santa Cruz de la Sierra, Bolivia, also taken by Steinbach.

37. **Orphulella punctata** (De Geer).

Acridium punctatum DE GEER, Mem. Ins., III, p. 593, pl. 42, fig. 12 (1773).
Truxalis punctata STÅL, Recens. Orthopt., I, p. 106 (1873).
Orphulella punctata GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp., Torino, IX, No. 184, p. 12 (1894); BRUNER, Ann. Carnegie Mus., VIII, pp. 11, 15 (1911).

Habitat.—The material at hand all comes from Santa Cruz de la Sierra and Puerto Suarez, Bolivia. It was collected by J. Steinbach.

38. **Orphulella expandens** (Walker).

Stenobothrus expandens WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 758 (1870).
Orphulella expandens KIRBY, Syn. Cat. Orthopt., III, p. 122 (1910); BRUNER, Ann. Carnegie Mus., VIII, pp. 11, 16 (1911).

Orphulella elegans GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 12 (1894).

Habitat.—This insect also was taken at Santa Cruz de la Sierra, Bolivia, by J. Steinbach.

39. **Orphulella intricata** (Stål).

Orphula intricata STÅL, Recens. Orthopt., I, p. 106 (1873).
Orphulella intricata GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184 (1894).

Habitat.—A number of specimens are at hand labeled Provincia del Sara, Bolivia.

Genus DICHROMORPHA Morse.

Dichromorpha MORSE, Psyche, VII, p. 326 (1896); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 31, 85 (1902, 1904); IB., Second Rept. Locust Comm. B. Aires, p. 28 (1900).

40. **Dichromorpha australis** Bruner.

Dichromorpha australis BRUNER, Locusts of Argentina, p. 29 (1900).
Dichromorpha viridis GIGLIO-TOS (*nec* Scudder), Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 24 (1897).

Habitat.—The collections made by J. Steinbach in Prov. del Sara, Bolivia, contain two males of this insect.

Genus TOXOPTERUS Bolivar.

Toxopterus BOLIVAR, Anal. Soc. Esp. Hist. Nat., XIX, p. 313 (1890).

These locusts with highly colored wings belong to tropical South America, and have their center of distribution in Peru, Bolivia, and the adjoining portions of Brazil. Up to the present but a single species has been known. A second one is now added.

41. **Toxopterus miniatus** Bolivar.

Toxopterus miniatus BOLIVAR, Anal. Soc. Esp. Hist. Nat., XIX, p. 314 (1890); BRUNER, Ann. Carnegie Mus., VIII, p. 23 (1911).

Habitat.—Specimens of this insect are at hand from both Sapucay, Paraguay, and Santa Cruz de la Sierra, Bolivia.

42. **Toxopterus orientalis** sp. nov.

About the same size as *T. miniatus* Bolivar, but readily distinguished from that insect in its noticeably more rubust form, the heavier and decidedly depressed antennal joints, in the well-defined lateral carinæ of the pronotum and in having the disk of wings ochre-yellow instead of deep orange-red. The fenestrate area of the wings in the present species is a little more regularly veined than in *miniatus*.

Vertex between the eyes rounded, longitudinally carinate, the fastigium about as long as wide, the antero-lateral carinæ straight, meeting in front at an acute angle; lateral foveolæ triangular, small, basal, barely visible from above. Frontal costa prominent above, viewed in profile roundly produced between the antennæ, the sides a little narrowed between the ocellus and antennæ, but evenly divergent below that point, reaching the base of the clypeus, sulcate throughout; facial or lateral carinæ broadly arcuate, their lower ends a little farther apart than the upper. Occiput and vertex gently ascending. Eyes fairly prominent, their length equal to the anterior margin of the cheeks. Pronotum only gently rugulose, with well-defined lateral carinæ, which are more widely separated on the hind than on the anterior lobe; and with the lobes subequal in length. Tegmina and wings completely developed, about reaching the apex of the hind femora, the former coriaceous, moderately broad, and with the costal field well developed, broadly rounded and supplied on the basal one-fourth with a small lobe, the apex obliquely truncate. Wings with a regularly fenestrate costal field. Hind femora rather robust, much coarser than in the same sex of *miniatus;* tibiæ also heavier than in the allied species.

General color of insect above brunneo-ferruginous; face uniformly pale greenish yellow; venter, except pale median line, pectus, and lower margin of middle and hind femora together with the coxæ black, tibiæ also black. Wings on disk and basally dull chrome-yellow, the apex and a narrow border towards hind angle infuscated. Antennæ, except the apex which is black, brunneo-testaceous.

Length of body, ♂, 22.5 mm., of pronotum, 5.25 mm., of tegmina, 18 mm., of hind femora, 16 mm.

Habitat.—The only specimen at hand is labeled "Rio de Janeiro" where it was taken by H. H. Smith during November. The type is in the Carnegie Museum.

Genus AMBLYTROPIDIA Stål.

Amblytropidia STÅL, Recens. Orthopt., I, pp. 93, 107 (1873); BRUNER, Biol. Cent.-Amer., II, pp. 29, 62 (1902, 1904); IB., Ann. Carnegie Mus., VIII, pp. 24–30 (1911).

43. **Amblytropidia corumbæ** Bruner.

Amblytropidia corumbæ BRUNER, Ann. Carnegie Mus., VIII, pp. 25, 28 (1911).

Habitat.—There is at hand a single female specimen, which was taken at Puerto Suarez, Bolivia, by J. Steinbach during the month of November.

44. **Amblytropidia chapadensis** Rehn.

Amblytropidia chapadensis REHN, Proc. U. S. Nat. Mus., XXX, p. 371 (1906); BRUNER, Ann. Carnegie Mus., VIII, pp. 25, 29 (1911).

Habitat.—J. Steinbach collected a single female specimen at Santa Cruz de la Sierra, Bolivia, which is referred here. It was taken at an elevation of 450 meters above sea-level.

45. **Amblytropidia interior** Bruner.

Amblytropidia interior BRUNER, Ann. Carnegie Mus., VIII, pp. 26, 29 (1911).

Habitat.—The single male at hand was taken at the same place as the preceding species.

Genus FENESTRA Giglio-Tos.

Fenestra GIGLIO-TOS (*nec* Brunner), Zool. Jahrb., Syst., VIII, p. 807 (1895); REHN, Proc. Acad. Nat. Sci. Phila., LVIII, p. 31 (1906).

Dichroatettix BRUNER, Second Rept. Locust Comm. B. Aires, pp. 22, 32 (1900).

46. **Fenestra bohlsi** Giglio-Tos.

Fenestra bohlsii GIGLIO-TOS, Zool. Jahrb., Syst., VIII, p. 807 (1895); REHN, Proc. Acad. Nat. Sci. Phila., 1906, p. 31.

Dichroatettix viridifrons BRUNER, Second Rept. Locust Comm. B. Aires, pp. 22, 32 (1900).

Habitat.—A single female of this insect is at hand. It was collected at Santa Cruz de la Sierra, Bolivia, by J. Steinbach. The elevation of the locality is 450 meters above sea-level.

Genus APOLOBAMBA[2] gen. nov.

Related to *Amblytropidia* Stål and *Leurocerus* Bruner, but readily distinguishable from both of these genera in a number of respects, as may be seen by referring to the accompanying synoptical table of the Tryxaline genera of South American locusts.

Insects of medium or small size, form slender, tegmina and wings complete, passing both the abdomen and hind femora at least in the males, the former sparsely veined on the apical half, more closely so on the basal half, without a well developed intercalary vein, the costal margin full and broadly rounded on the basal three-fourths, contracted beyond, and with the apex rounded as in *Stenobothrus*. Wings without the fenestrate area of *Toxopterus* and allies. Top of the head furnished with a percurrent longitudinal carina. Antennæ filiform, rather long. Frontal costa sulcate and expanding below. Pronotum rugoso-punctate, very gently divergent on the hind lobe, the two lobes about equal in length; without definite lateral carinæ, but with the rugæ tending to form several longitudinal parallel ridges both on the disk and on the lateral lobes. Pinnæ regular. Hind femora with the apical portion graceful, passing the apex of the abdomen by the length of the genicular portion, the lobes rather small but acuminate, the superior carina terminating in a small triangular tooth. Hind tibiæ slender, 7-spined externally, 10-spined internally; internal spurs much larger than the outer ones, but the former not very different in size.

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[2] A geographical name.

The type of this genus is the species *pulchra* and is described herewith.

47. **Apolobamba pulchra** sp. nov.

This insect may at once be recognized by the conspicuously orange-red color of the pectus, venter, and lower edge and sulcus of the hind femora, the pallid tint of the lower portion of the lateral lobes of the pronotum, and the pale anterior and middle legs.

Head moderately large, a little wider than the front edge of the pronotum; viewed in profile the front is rather oblique. Eyes small, not prominent, straight in front, rounded behind, but little longer than the anterior edge of the cheeks immediately below them. Vertex rather wide, nearly equal to the short diameter of the eyes, rounded, and provided with a well marked carina that reaches from the fastigium to the pronotum; fastigium provided with antero-lateral walls, which meet in front at somewhat less than a right-angle; viewed from above the foveolæ represented only by a few coarse punctures on a partially visible ridge of even width over the antennal foveæ. Frontal costa fairly prominent, its sides parallel to the ocellus, divergent below, sulcate to the middle of the face, coarsely punctulate below, as is also most of the face between the lateral carinæ; these last straight and gently divergent below, reaching and continuing upon the mandibles. Antennæ moderately robust, but filiform, about 20-jointed, nearly one and one-half times the length of the head and pronotum taken together. Pronotum subcylindrical, the median carina prominent throughout, severed only by the last sulcus, hind margin angulate, lateral lobes granulately rugose, a little higher than long, their lower edge sinuose and obliquely docked in front. Tegmina as described under generic diagnosis. Legs normal. Abdomen graceful, gently tapering, the apex of the last ventral segment entire, gently acuminate; cerci evenly tapering, a little longer than the supra-anal plate, which latter is triangular and has the middle strongly longitudinally sulcate and the margins more or less sinuate. Mesosternal lobes separated by a quadrate space, which is about as long as broad, and equal to the lobes themselves.

General color of insect above dark brownish, verging into dull black on the occiput, upper portion of the sides of the pronotum, and the base of the tegmina. Front and cheeks varied with dull brown; lower part of the lateral lobes of the pronotum and pleura together with the coxæ, femora, and tibiæ of anterior and middle legs, pale testaceous. Inner face largely, upper edge entirely, and the superior portion of the outer disk of the hind femora narrowly, pallid, the latter most conspicuously so. Remaining portion of the outer disk, together with the genicular portion and base of tibiæ, black. Pectus, venter, and under side of hind femora bright orange-red. Abdomen above fuscous, varied at sides with pallid maculations. Antennæ black; palpi pallid with narrow fuscous fasciæ. Wings hyaline, becoming somewhat embrowned or infuscated along the costal margin and apically. Tibiæ brownish, with a wide pale subbasal annulation; spines pallid, with black apical half; tarsi pallid, annulate with fuscous.

Length of body, ♂, 16.5 mm., of pronotum, 3.35 mm., of tegmina, 16 mm., of hind femora, 10 mm.

Habitat.—The single specimen at hand was collected by J. Steinbach at Santa Cruz de la Sierra, Bolivia, at an elevation above sea-level of 450 meters. It also bears the accession number 4546.

The type is the property of the Carnegie Museum.

Genus STAUROREHECTUS Giglio-Tos.

Staurorhectus GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 26 (1897); BRUNER, Ann. Carnegie Mus., VIII, p. 31 (1911).

48. **Staurorhectus intermedius** Bruner.

Staurorhectus intermedius BRUNER, Ann. Carnegie Mus., VIII, p. 31 (1911).

Habitat.—Santa Cruz de la Sierra, Bolivia, a single male specimen.

Genus ALOTA[3] gen. nov.

The insect upon which the present genus is based comes from Bolivia. Its general aspect is that of an *Orphulella*. On closer inspection, however, it proves to be very different. In fact it is found to belong close to the *Scyllinæ*. Its chief characteristics are a medium sized head with prominent eyes, a slightly depressed, somewhat acuminate vertex, which is deeply sulcate, and provided in front with well-defined, visible foveolæ, which are much longer than wide; the front, pronotum, and pleura are very coarsely and deeply punctulate; the pronotum is sub-sellate and without lateral carinæ; the tegmina are long and narrow, profusely veined at the base and along the dorsal field, without an intercalary vein, and rounded at apex; the wings lack the fenestrate character of *Orphulella* and allies; the hind femora are wide and robust on the basal half, but slender beyond, with regular pinnæ externally, the genicular lobes rounded at apex; tibiæ adorned with comparatively few, but large, spines; the mesosternal space or interval is unusually wide.

A more complete diagnosis follows in connection with the specific description given below.

49. **Alota boliviana** sp. nov.

Size below the medium, slender, with narrow tegmina and wings, which pass both the abdomen and femora, the apex of former rounded. Front, pronotum, and pleura strongly punctulate. General color dull wood-brown, paler below. Hind tibiæ pale glaucous.

Head small, scarcely as wide as the front end of the pronotum, the front strongly oblique. Eyes prominent, rounded behind, more nearly straight in front, their longest diameter almost a third greater than the anterior margin of the cheeks, separated above by a space nearly or quite one and one-half times the width of the frontal costa between the antennæ; fastigium of the vertex a little longer than broad, triangular, quite deeply sulcate, the antero-lateral carinæ prominent and meeting in a slightly acute angle; lateral foveolæ visible from above, about twice as long as wide. Frontal costa fairly prominent, a little narrowed next to the fastigium, wider between the antennæ, narrowed a trifle in the vicinity of the ocellus and divergent below and continued to the clypeus, somewhat sulcate, punctulate above and below. Lateral or facial carinæ prominent, continuous from the ocelli to the base of the mandibles, gently arcuate and divergent. Antennæ missing, the basal joint large, nearly as broad as the vertex, possibly filiform. Pronotum gently selliform, the two lobes about equal in length, the anterior one rounded above and without traces of lateral carinæ, the posterior one depressed and with well-defined shoulders but not carinate at sides, hind margin rectangulate, median carina visible throughout, severed by the last transverse sulcus. Tegmina narrow, somewhat coriaceous, and closely nerved on the dorsal field of the basal half, beyond less closely veined and somewhat membranous, without intercalary vein. Abdomen carinate above, evenly tapering, the apex bluntly acuminate, cerci and supra-anal plate simple. Hind femora fairly large and robust basally, slender beyond, the genicular lobes rounded at apex; tibiæ 7-spined externally; inner spurs very unequal in size, reminding one of the genera *Stirapleura* and *Scyllina*. Interspace between the mesosternal lobes nearly twice as wide as long and somewhat greater than the width of the lobes themselves.

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[3] This is also a geographical name.

General color as mentioned above, the front, legs, including the hind femora, and lower side, pale brunneo-testaceous, the abdomen a little paler with a series of obscure triangular dorsal maculations, one on the base of each of segments 1–7; base of hind tibiæ and interior lower edge of femoral genæ a little obscured.

Length of body, ♂, 15 mm., of pronotum, 3.1 mm., of tegmina, 14 mm., of hind femora, 10 mm.

Habitat.—Rio Machupo, near Rio Guaporé, Bolivia, Aug. 29 (Haseman collector). The only specimen at hand, the type of both the genus and species, is deposited in the Carnegie Museum.

This insect on account of its coarsely pitted front, pronotum, and pleura seems to fall near *Ligurotettix* Bruner.

Genus STIRAPLEURA Scudder.

Stirapleura SCUDDER in Wheeler, Ann. Rept. U. S. Geol. and Geogr. Surv. Merid., Append. JJ., p. 290, (1876).

50. **Stirapleura bruneri** Rehn.

Stirapleura bruneri REHN, Proc. Acad. Nat. Sci. Phil., 1906, p. 49.

Stirapleura signatipennis BRUNER (*nec* Blanchard), Second Rept. Locust Comm. B. Aires, pp. 34, 36, fig. 12 (1900).

Habitat.—There are at hand five specimens, one male and four females. They come from Santa Isabel, Rio Negro, Uruguay. They were collected by J. D. Haseman on February 12, 1909.

Genus SCYLLINA Stål.

Scyllina STÅL, Recens. Orthopt., I, pp. 94, 112 (1873); for further synonymy see Ann. Carnegie Mus., VIII, p. 35.

51. **Scyllina conspersa** (Bruner).

Plectrotettix conspersa BRUNER, Biol. Cent.-Amer., Orthopt., II, p. 100 (1904); IB., Proc. U. S. Nat. Mus., XXX, pp. 635, 636 (1906).

Scyllina conspersa REHN, Proc. Acad. Nat. Sci. Phila., 1906, p. 47.

Habitat.—Santa Isabel, Rio Negro, Uruguay, February 12, 1909, J. D. Haseman collector. The single female at hand was in a box with three specimens of *Schistocera paranensis* Burmeister. It bears the label "by the billions, a great pest in all central southern S. America this year—eats everything except leaves of coffee plant."

The above record in connection with the present species, and that referring to the following one, would tend to show that most, if not all, of the South American species belonging to the genus at times increase so as to become pests. Similar observations have also been made and recorded concerning some of the Mexican and Central American representatives of the genus.

52. **Scyllina** sp.?

The collection made by J. D. Haseman contains also several half-grown nymphs of this genus of locusts. They were taken along the Rio Novo, in the province of Goyaz, Brazil. All of the specimens are of the same size and appearance, being flavous and very heavily marked with black. They evidently belong to *S. smithi* Rehn, or a closely allied form, the representatives of which vary but little in size and color. Mr. Haseman states that there were "millions in grass." They were taken February 4, 1908.

53. **Scyllina brunneri** (Giglio-Tos).

Pseudostauronotus brunneri GIGLIO-TOS, Zool. Jahrb., Syst., VIII, p. 809 (1895).

Plectrotettix brunneri BRUNER, Biol. Cent.-Amer., Orthopt., II, p. 100 (1904); IB., Proc. U. S. Nat. Mus., XXX, p. 636 (1906).

Scyllina brunneri REHN, Proc. U. S. Nat. Mus., XXX, p. 385 (1906).

Habitat.—Four males and one female taken by J. Steinbach are referred to this variable species. They were collected at Santa Cruz de la Sierra, Bolivia, at an elevation of 450 meters above the sea.

Family ŒDIPODIDÆ (LOCUSTIDÆ).

The old family Œdipodidæ (now Locustidæ) is but poorly represented in South American countries. Most of its representatives are to be met with either on the more elevated portions of the Andean chain or the arid and semiarid portions of Chile and Argentina. The collections now being studied contain but four forms.

Genus DISSOSTEIRA Scudder.

Dissosteira SCUDDER, Wheeler's Ann. Rept. Geol. and Geogr. Surv., W. 100th Merid., Append. JJ., p. 291 (1876).

54. **Dissosteira carolina** (Linnæus).

Gryllus (*Locusta*) *carolinus* LINNÆUS, Syst. Nat. (Ed. x), I, p. 433, n. 51 (1758).
Acrydium carolinum DEGEER, Mém. Ins., II, p. 491, pl. 41, figs. 2, 3 (1773).
Gryllus carolinus FABRICIUS, Syst. Ent., p. 291, n. 22 (1775).

An extended synonymy is given in Kirby's *Synonymic Catalogue of Orthoptera*, III, pp. 231–232 (1910).

Habitat.—This insect is mentioned in the present paper on the strength of a fully grown nymph bearing the label "Jamaica, W. I." It is a portion of the Carnegie Museum accession number 2306.

This specimen must be accidental on that island, since I find no former reference to this locust having been taken in the West Indies or South America.

Genus LACTISTA Saussure.

Lactista SAUSSURE, Mém. Soc. Geneve, XXVIII, no. 9, pp. 54, 102 (1884); IB., l. c., XXX, no. 1, p. 20 (1888); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 116, 167 (1905).

55. **Lactista australis** sp. nov.

A moderately robust insect with pale yellowish hyaline disk on wings. Most closely related to the *L. pulchripennis* of Saussure, but decidedly smaller.

Body compressed, but deep and robust about the thorax. Pronotum rather strongly rugose above and somewhat less so at hind margin of sides, with a strong cristate median carina, which is profoundly cut by the hind transverse sulcus plainly in advance of the middle; posterior lobe strongly divergent caudad, the hind margin of the disk very gently acute-angled in the male and a trifle obtuse-angled in the female; lower posterior angle provided with a well-defined downwardly projecting tooth. Head a little narrower than the anterior portion of the pronotum, the occiput gently ascending, provided with two large and deep subquadrate pits, in advance of these and immediately between the eyes on the vertex are two smaller pits, and in front of these the fastigium is also profoundly sulcate, with heavy bounding walls, which are continuous with the carinæ of the frontal costa; lateral foveolæ triangular, well defined; upper end of the frontal costa also quite deeply pitted, sulcate throughout, and with the sides gently approaching below the ocellus for a short distance. Tegmina and wings normal, considerably surpassing both the apex of the abdomen and hind femora in the two sexes. Hind femora moderately robust. Interspace between the mesosternal lobes about twice as wide as long, and about equal to the lobes themselves.

General color cinereo-testaceous, varied with black and fuscous maculations. Tegmina prominently fasciate with fuscous and grayish testaceous; the apical third vitreous obliquely towards the base. Wings with the basal half, or a trifle more, pale greenish yellow, followed by a fairly conspicuous fuscous band, which is most prominent back of the humeral field and well towards the anal angle, on the costal margin continued towards the apex, but not basally; the apex vitreous, but with the veins black. Hind femora externally largely cinereous, but with two well defined oblique fuscous bands, internally mostly black with two transverse pale bands; the knees black. Hind tibiæ pallid, somewhat tinged with plumbeous; the base and apex as well as a submedian area infuscated, giving to them a decidedly fasciate appearance. Antennæ pale at base, fuscous beyond.

Length of body, ♂, 14 mm., ♀, 23 mm.; of pronotum, ♂, 3.75 mm., ♀, 5 mm.; of tegmina, ♂, 19 mm., ♀, 22 mm.; of hind femora, ♂, 10 mm., ♀, 12.5 mm.

Habitat.—The two specimens at hand, male and female, were collected at Bonda (village seven miles east of Santa Marta), Colombia, in June by H. H. Smith. The types belong to the Carnegie Museum.

The female specimen here described is the insect referred to on page 169 of Vol. II, *Biologia Centrali-Americana, Orthoptera*, as *L. pulchripennis* Saussure.

Genus SPHINGONOTUS Fieber.

Sphingonothus FIEBER, Kelch. Orthopt. Oberschles, p. 2 (1852)

Sphingonotus FIEBER, Lotus, III, p. 124 (1853).

While the present rather extensive genus is confined chiefly to the Orient, at least a half-dozen recognized forms belong to the Western Hemisphere.

56. **Sphingonotus haitensis** (Saussure).

Œdipoda haitensis SAUSSURE, Rev. Zool., (2) XIII, p. 323 (1861).
Sphingonotus haitensis SAUSSURE, Mem. Soc. Genève, XXVIII (9), pp. 196, 202, No. 7 (1884); IB., l. c., pp. 77, 81, No. 10 (1888).

Habitat.—There are two male specimens at hand, the one coming from the Isle of Pines, and the other from Watling's Island, in the Bahamas. It has also been reported from other West Indian islands and Mexico.

Genus CŒLOPTERNA Stål.

Cœloptera STÅL, Œfv. Vet.-Akad. Förh., XXX, No. 4, p. 53 (1873).

57. **Cœlopterna acuminata** (De Geer).

Acrydium acuminatum DE GEER, Mém. Ins., III, p. 501, No. 19, pl. 42, fig. 10 (1773).
Cœloptera acuminata STÅL, Recens. Orthopt., I, p. 145, No. 1 (1873).
Cœlopterna stalii SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, p. 277, No. 34 (1875).
Epacromia selecta WALKER, Cat. Derm. Salt. Brit. Mus., V, Suppl., p. 84 (1871).

Habitat.—This widely distributed South American locust is represented by a large number of specimens of both sexes. Some of the localities are: Morro do Pará, Bahia; Alcobaca, Rio Tocantins in Grão Pará; Santa Rita, Lagoa de Rio Preto, Bahia, in Brazil; and Santa Fe de la Sierra, Puerto Suarez, and Villa Bella, in Bolivia.

This locust is aquatic in habit, as attested by its dilated hind tibiæ, and by the fact that it is only taken near the water. It is drawn to lights at night, where it is most readily collected.

Family OMMEXYCHIDÆ.

The locusts belonging to this family are all confined to the South American continent, with their center of distribution pretty well to the southward. Forms occur from the eastern slopes of the Andes Mountains in Peru and Bolivia to the Atlantic and from the Amazon River in the north to at least as far southward as the Rio Negro and Bahia Blanca in Argentina. The genus *Ossa* Giglio-Tos, replaced by *Parossa* Bruner (ANN. CARNEGIE MUS., VIII, p. 38, 1911) is an aberrant form with smooth pronotum, and in which the wings are fully developed and transparent. All of the others, so far as known, have the thorax strongly spined or tuberculate and generally with either strongly abbreviated or even rudimentary wings. As mentioned by the present writer in the ANNALS, the different species are frequently confined to special food-plants, upon which they sometimes congregate in large numbers. Several of them are known to attack tobacco and closely allied plants.

Genus OMMEXECHA Serville.

Ommexecha SERVILLE, Ann. Soc. Nat., XII, p. 285 (1831); BOLIVAR, Rev. Chilena Hist. Nat., III, p. 54 (1899); BRUNER, Second Rept. Locust Comm. B. Aires, p. 47 (1900).

58. **Ommexecha servillei** Blanchard.

Ommexecha servillei BLANCHARD, Ann. Soc. Ent. France, V, p. 613, pl. 22, figs 2, 3 (1836).

Habitat.—There is a single male before me, which comes from Santa Cruz de la Sierra, Bolivia. It was taken by J. Steinbach at an elevation of 450 meters above sea-level.

59. **Ommexecha giglio-tosi** Bolivar.

Ommexecha giglio-tosi BOLIVAR, Rev. Chilena Hist. Nat., III, p. 54, 55 (1899).
Ommexecha brunneri GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, No. 302, p. 27, in part (*nec Ommexecha brunneri* Bolivar).

Habitat.—A single male specimen of this locust is at hand. It was taken at the same locality as the preceding by J. Steinbach.

Genus SPATHALIUM Bolivar.

Spathalium BOLIVAR, Ann. Soc. Esp., XIII, p. 21, 30, 403 (1884).

60. **Spathalium bolivari** Bruner.

Spathalium bolivari BRUNER, Ann. Carnegie Mus., VIII, pp. 39–41 (1911).

Habitat.—A very much mutilated specimen from Santarem, Brazil, is at hand. It is part of accession number 2966, and was taken during December.

Family CYRTACANTHACRIDÆ (ACRIDIIDÆ).

This is by far the most extensive family of short-horned grasshoppers, or locusts. It is especially well represented in South America, where more than one hundred and thirty genera have already been recognized. The present collection contains its share of them, as will be seen by the following records.

Genus PRIONOLOPHA Stål.

Prionolopha STÅL, Recens. Orthopt., I, p. 27 (1873).

For further synonymy see Kirby's *Syn. Cat. Orthopt.*, III.

61. **Prionolopha serrata** (Linnæus).

Gryllus (Bulla) serratus LINNÆUS, Syst. Nat., ED. X., p. 427 (1758).

For synonymy see ANN. CARNEGIE MUS., VIII, p. 43.

Habitat.—There are five males and four females at hand. They were taken at Puerto Suarez and Santa Cruz de la Sierra, Bolivia.

Genus MUNATIA Stål.

Munatia STÅL, Bihang Svensk. Akad. Handl., III (14), p. 28 (1875).

62. **Munatia minor** (Giglio-Tos).

Procolpia minor GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp., Torino, IX, No. 184, p. 17 (1894).

Habitat.—The single male specimen before me as I write comes from San Antonio de Guaporé, on the Rio Guaporé.

Genus COLPOLOPHA Stål.

Colpolopha STÅL, Œfv. Vet.-Akad. Förh., XXX, No. 4, p. 274 (1873).

63. **Colpolopha latipennis** Stål.

Colpolopha latipennis STÅL, Bihang. Till K. Sv. Vet.-Akad. Handl., V, No. 9, p. 19 (1878).

Habitat.—A single female is at hand. It was taken at Bogotá, U. S. of Colombia.

Genus DIEDRONOTUS Bolivar.

Diedronotus BOLIVAR, Boll. Soc. Espan., VI, p. 396 (1906).

See remarks on the genus in these ANNALS, VIII, pp. 47–49.

64. **Diedronotus angulatus** Stål.

Diedronotus angulatus STÅL, Recens. Orthopt., I, p. 44 (1873).

Habitat.—This common insect is represented by six males and five females. They come from Puerto Suarez, Santa Cruz de la Sierra and Provincia de Sara, Bolivia. They show several of the color variations common to the species.

65. **Diedronotus discoideus** (Serville).

Tropinotus discoidens SERVILLE, Ann. Sci. Nat., XXI, p. 273, No. 2 (1831).

For other synonymy see Kirby's *Syn. Cat. Orthopt.*, III, p. 360.

Habitat.—Two females labeled with Sapucay, Paraguay, as their habitat are referred here. They were collected by J. D. Haseman.

66. **Diedronotus lævipes** (Stål).

Tropidonotus lævipes STÅL, Obs. Orthopt., III, p. 20 (1878).
Diedronotus lævipes BRUNER, Ann. Carnegie Mus., VIII, p. 49 (1911).

Habitat.—A single male specimen of this insect is among the collections taken at Santa Cruz de la Sierra, Bolivia. It was collected by J. Steinbach.

Genus CORYACRIS Rehn.

Coryacris REHN, Proc. U. S. Nat. Mus., XXXVI, p. 111 (1909).

67. **Coryacris angustipennis** (Bruner).

Elæochlora angustipennis BRUNER, Second Rept. Locust Comm. B. Aires, p. 58 (1900).
Coryacris diversipes REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 111–114, figs. 1, 2 (1909).

Habitat.—Four males and two females taken by J. Steinbach belong here. They come from Santa Cruz de la Sierra, Bolivia.

68. **Coryacris conspersipennis** Bruner.

Coryacris conspersipennis BRUNER, Ann. Carnegie Mus., VIII, p. 53 (1911).

Habitat.—A female representative of this species is at hand coming from Puerto Suarez, Bolivia. It was collected during May by J. D. Haseman.

Genus ELÆOCHLORA Stål.

Elæochlora STÅL, Œfv. Vet. Akad. Förh., XXX, No. 4, p. 52 (1873); PICTET et SAUSSURE, Mitth. Schweitz. Ent. Ges., VII, p. 343 (1887).

The insects which comprise the genus *Elæochlora* are all large and showy. In their distribution they are confined to the South American continent between the latitudes of 10° north and 35° south, and from the Atlantic to the Pacific Oceans. The various species readily separate into two well defined groups based on structure. Those belonging to the one group have their center of distribution in eastern Brazil, Paraguay, Argentina and the adjoining parts of southeastern Bolivia. The species of the other group occur chiefly in Venezuela,

U. S. of Colombia, western Brazil, Ecuador, Peru, and Bolivia. In their habits these insects are more or less social, and frequently occur in family groups. Some of the species are known to prefer special food-plants, which they attack rather than others. Aside from the main characters used for their separation into the two principal groups, as indicated in the annexed synoptical table, the females of the various forms are quite difficult to separate. On the other hand the males of most species are very distinct and quite easily differentiated. About a score of forms have thus far been recognized.

W. F. Kirby in his *Synonymic Catalogue of the Orthoptera*, Vol. III, p. 365, names the species *scabra* Thunberg as the type of the genus. It seems to me, however, that a species in which both sexes are described should be chosen instead. Why not take either *viridicata* or *trilineata* of Serville for this purpose, both of which were also included by Stål, the author of the genus.

SYNOPSIS OF THE SPECIES OF ELÆOCHLORA.

A. Spines on the inner margin of the hind tibiæ more or less strongly curved and but little longer than those on the outer margin. Tegmina and wings often abbreviated even in the males, always much shorter than the abdomen, and with the apex of the former more or less rounded in both sexes. Wings hyaline, or flavous.

  b. Tegmina of males plainly shorter, often very much shorter, than the abdomen.

    c. Tegmina and wings decidedly shorter than the abdomen.

      d. General color olivaceous. Hind femora of normal form. Hind margin of pronotum acute or subacute.

        e. Sides of pronotum marked much as in *pulchella*, *viridicata* and allies. Tegmina pale-bordered throughout [Sta. Cruz de la Sierra, Bolivia]................*brachyptera* sp. nov.

        ee. Sides of pronotum uniformly green. Tegmina not pale-margined at the apex [State of São Paulo, Brazil]. *arcuata* Rehn.

      dd. General color brunneo-testaceous, varied with piceous and black. Hind margin of pronotum very obtuse-angled even in the male. Hind femora short and robust [Chapada, Brazil]. *brevipennis* Bruner.

    cc. Tegmina but little shorter than the abdomen.

      d. Smaller (♂, 28–33 mm.). Median carina of the pronotum viewed in profile straight [Corumbá, Brazil]...........*pulchella* Rehn.

      dd. Larger (♂, 37 mm.). Median carina of the pronotum viewed in profile arcuate [Santa Catherina, Brazil]. *fruhstorferi* Bolivar.

bb. Tegmina and wings of males as long as or longer than the abdomen.
  c. Tegmina rapidly and evenly tapering apically. The fastigium of the vertex smaller.
    d. Apex of the tegmina rounded [Brazil]. *parvispina* Pictet et Saussure.
    dd. Apex of the tegmina oblique [Chapada, Matto Grosso, Brazil]. *humilis* Rehn.
  cc. Tegmina not as rapidly tapering apically. The fastigium of the vertex larger.
    d. Median carina of the pronotum subobsolete, the posterior margin of its disk obtusangulate (♀), rectangulate (♂) [Brazil]. *trilineata* Serville.
    dd. Median carina of the pronotum distinct, the posterior margin of its disk rectangulate (♀), frequently acutangled (♂) [Argentina] .... *viridicata* Serville.

AA. Spines on inner margin of the hind tibiæ nearly straight and much longer than those on the outer margin. Tegmina subacuminate, in the male surpassing, in the female almost or quite as long as the abdomen. Wings usually orange or reddish. Anterior margin of the pronotum at middle sinuate or emarginate.
  b. Wings for the most part testaceous or pale yellow; anterior margin of the pronotum sinuate.
    c. Larger (♀, 68 mm.) [Brazil] .... *scabra* Thunberg.
    cc. Smaller (♀, 51 mm.) [Bogotá, Colombia] .... *granulosa* Stål.
  bb. Wings dark yellow, orange, or red. Anterior margin of pronotum emarginate.
    c. Wings ochraceous or crocus-yellow.
      d. Size smaller (♂, 31 mm.). Wings ochraceous with infuscated apex [Brazil] .... *spoliata* Walker.
      dd. Size larger (♂, 36 mm.). Wings saffron-yellow with a greenish apex [Brazil] .... *hymenæa* Gerstæcker.
    cc. Wings orange-red, tile-red, or vermilion.
      d. Sides or lateral lobes of pronotum and cheeks conspicuously bilunate with white. Front on each side of frontal costa also largely white. Anterior and posterior margins of the tegmina greenish white. Wings brick-red with infuscated apical region [Bogotá, Colombia]. *picticollis* Gerstæcker.
      dd. Sides or lateral lobes of pronotum and cheeks concolorous. Costal margin of the tegmina also concolorous, not pallid.
        e. Disk and base of the tegmina concolorous, without paler lunules or maculæ.
          f. Tegmina with only the dorsal or hind margin pale vittate.
            g. Wings orange-red, the apex broadly infumate. [Cumbase, Peru] .... *hilaris* Gerstæcker.
            gg. Wings vermilion-red, rather broadly banded towards the apex with fuscous [U. S. of Colombia]. *psittacina* Gerstæcker.

ff. Tegmina provided also with a subcostal pallid vitta [Bogotá, Colombia] .... *bivittata* Gerstæcker.

ee. Disk and base of tegmina marked with pale maculæ or lunules.

f. Males with two circular white lunules in the disk toward the base [Colombia]....... *bilunata* Gerstæcker.

ff. Base of male tegmina marked with a single pale lunule or patch.

g. Tegmina provided on the disk near the base with a single bright yellow, black-bordered spot [Venezuela]....................... *jucunda* Walker.

gg. Tegmina provided at base on the costal margin with an elongate ivory-white patch [Santa Cruz de la Sierra, Bolivia]................ *basalis* sp. nov.

69. **Elæochlora brachyptera** sp. nov.

Belonging in the section of the genus with *E. trilineata*, *viridicata*, *pulchella*, and *arcuata*, but most closely related to the last. It differs from *arcuata*, however, in the somewhat shorter tegmina and wings, and in having the lateral lobes of the pronotum colored more like those in *viridicata*.

Pronotum both arcuate and somewhat more strongly tectate than usual in the species of the genus. Viewed in profile the median carina is quite well arched and separated into lobes by the profound transverse sulci. Head with the occiput a little elevated and rounded, not embraced by the anterior margin of the pronotum to the same extent as in its allies; fastigium of the vertex triangular, its sides rather heavy and meeting in front, so as to form almost a rectangle, the hind end of disk depressed transversely; eyes of moderate size and prominence, separated at the vertex by a space equal to the greatest diameter of one of them and the same as the length of the front margin of the cheeks. Antennæ fairly heavy and subensiform, somewhat longer than the head and pronotum taken together, but not quite the length of the hind femora. Frontal costa but little produced between the antennæ, its sides heavy and evenly divergent below, sulcate throughout; when viewed in profile the front is rather oblique, but almost straight; the facial carinæ prominent and straight, as are also the anterior margins of the cheeks, which are nearly parallel to the latter and extend upwards along the front margin of the eyes as yellow lines, which assist in inclosing a long, narrow, smooth area between the facial carinæ and the sides of the head. Pronotum quite strongly rugose and tuberculate as in *pulchella*, its anterior margin entire and subangulately but gently advanced upon the occiput, the hind margin of the disk somewhat obtuse-angled; viewed from above widest at hind end of anterior third, where there is a prominent outwardly directed tooth-like tubercle on either side. Tegmina about half as long as the abdomen, moderately heavily and profusely veined, their dorsal edges barely overlapping at middle. Abdomen carinate above, tapering, the last ventral segment elongate, acuminate, carinated at middle; supra-anal plate elongate-triangular, tectate, its apex blunt, but with its middle gently sulcate throughout. Hind femora about normal, passing the tip of the abdomen by the length of the knees, the tibiæ with the inner row of spines curved, a little heavier and longer than those on the outer margin. Anterior and middle legs moderately robust.

General color of body above brownish olive varied with black, ferruginous, dirty white, pink and flavous. Antennæ reddish on outer three-fourths, but paler basally, where they are tinged with greenish yellow. Front pale olive-green, the carinæ bright citron-yellow; cheeks and occiput castaneous, paler, and with a ferruginous tinge in middle of latter. Pronotum with a longitudinal median band of reddish brown bordered on each side by black, remainder of disk olive-green; the lateral lobes below the shoulder black, bordered widely in front, below, and along the hind margin, with dirty white; lateral tubercles and adjacent, surface flavous. Tegmina with greenish and yellow veins, the disk black and widely bordered by pallid, which varies from cream-white to dull pink. Dorsal carina of abdomen deep ferruginous, bordered at sides by a pair of elongate pale spots upon each segment. Hind femora pale brunneo-ferruginous, the lunules lightly infuscated; hind tibiæ dark oil-green, outer spines pallid, with black tips, inner spines mostly dusky, tarsi and apex of the tibiæ above vinaceous. Venter and pectus bright yellow.

Length of body, ♂, 37 mm., of pronotum, 11.5 mm., of tegmina, 12 mm., of hind femora, 20 mm., greatest width of pronotum, 6.25 mm.

Habitat.—Santa Cruz de la Sierra, Bolivia, at an elevation of 450 meters above sea-level, a single male which was collected by J. Steinbach.

The type belongs to the Carnegie Museum.

70. **Elæochlora pulchella** Rehn.

Elæochlora pulchella REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 124–126, figs. 11, 12 (1909).

Habitat.—A single male and four females are at hand from Puerto Suarez, Bolivia, where they were collected by J. Steinbach.

71. **Elæochlora picticollis** (Gerstæcker).

Xiphocera picticollis GERSTÆCKER, Stett. Ent. Zeit., XXIV, p. 188, No. 10 (1873).
Elæochlora picticollis PICTET et SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 343 (1887).

Habitat.—The only specimen at hand, a male, comes from Bogotá, U. S. of Colombia. It bears the accession number 2306.

72. **Elæochlora** sp.?

The material collected by J. Steinbach in the "Provincia del Sara," Bolivia, contains two female specimens of this genus. On account of the absence of males from the same locality it is impossible to determine the species to which they belong. They were collected at an elevation of 450 meters above sea level. This much, however, can be said concerning their identity: they belong to that section of the genus with the emarginate anterior margin of the pronotum and the much longer spines on the inner edge of the hind tibiæ than on the outer. Whether or not they represent a described species is difficult to decide from the material at hand.

73. **Elæochlora bivittata** (Gerstæcker).

Xiphicera bivittata GERSTÆCKER, Stett. Ent. Zeit., XXIV, p. 187 (1873).
Elæochlora bivittata KIRBY, Syn. Cat. Orthopt., III, p. 366 (1910).

Habitat.—Bogota, U. S. of Colombia, two males. Also a part of accession number 2306, Carnegie Museum.

74. **Elæochlora basalis** sp. nov.

Most closely related to *E. jucunda* Walker, coming from Venezuela, but readily separated from that species by the position and color of the pale spot located at the base of each elytron, as indicated in the synoptic table of species which accompanies this paper.

Insect of medium size and moderate robustness. Tegmina and wings slightly passing the apex of the hind femora. Head fairly large, the occiput but little elevated; eyes prominent, separated at the vertex by a space scarcely equal to their shortest diameter, the fastigium horizontal, shallowly sulcate, its sides meeting at front in a slightly acute angle; frontal costa rather prominent between the antennæ and above, somewhat less so at the ocellus and below, its sides evenly divergent below, sulcate throughout, viewed in profile the front somewhat sinuose; facial carinæ prominent, straight and gently divergent, anterior margin of cheeks scarcely carinated, not quite as long as the greatest diameter of the eyes. Pronotum rugoso-punctate, the median carina coarse, interrupted, and more or less tuberculate or nodose, lateral carinæ also minutely nodulose; anterior margin nodulose, emarginate at middle, the posterior margin acute-angled, the disk of hind lobe flattened. Tegmina of moderate width, gently tapering, subacuminate, the veins inconspicuous, but numerous, the dorsal edge straight. Hind femora moderately robust, evenly tapering, and with the carinæ, but more especially the lower ones, serrate, the genicular lobes broadly rounded; hind tibiæ about as long as the femora, the inner spines fully twice the length of the outer ones, nine to eleven in number on both margins. Abdomen tapering but little. Last ventral segment evenly tapering, carinated at middle, acuminate, directed to the rear. Supra-anal plate elongate triangular, tectate, deeply and profoundly longitudinally sulcate. Prosternal spine erect, elongate pyramidal, the apex acute. Antennæ moderately heavy, about as long as the hind femora, the joints on basal third somewhat depressed. Pleura and sides of abdomen rather strongly punctulate. Entire insect rather prominently hirsute, but this characteristic is best observed on the legs.

General color above including the legs olive-green. Dorsum from fastigium of the vertex across the occiput, the disk of the pronotum and almost to the tips of the tegmina with a rather wide pale band, which is bordered on the pronotum and tegmina with black, more widely so on the former, but becoming narrower on the latter to their middle, where this color runs out. Inside of this the median field of the tegmina is largely vinaceous, while the remainder is dark grass-green, except for a conspicuous elongate ivory-white patch, which is located at the base of the costal border so as to be partly covered when the insect is at rest and the wings in position. Hind tibiæ deep brownish purple. Underside and front pale testaceous. Wings for the most part tile-red inclining to orange. Antennæ testaceous, tinged with olive-green basally.

Length of body, ♂, 37 mm., of pronotum, 10.75 mm., of tegmina, 30 mm., of hind femora, 23 mm., greatest width of pronotum, 5 mm.

Habitat.—There are two male specimens at hand, which were taken at Santa Cruz de la Sierra, Bolivia, by J. Steinbach.

The type is deposited in the Carnegie Museum.

Genus CHROMACRIS Walker.

Chromacris WALKER, Cat. Derm. Salt. Brit. Mus., IV, p. 643 (1870).

75. **Chromacris miles** (Drury).

Gryllus (*Locusta*) *miles* DRURY, Illustr. Exot. Ent., II, p. 79, pl. 42, fig. 2 (1773).

Habitat.—There are five specimens of this locust among the material now under consideration, three males and two females. They were taken in the U. S. of Colombia; Provincia del Sara and Santa Cruz de la Sierra, Bolivia; and also at Galhua, Rio Sapão, western Bahia, Brazil.

The specimen from the last named locality, a female, is unusually small.

76. **Chromacris stolli** (Pictet et Saussure).

Rhomalea stolli PICTET et SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 348 (1887).
Chromacris stolli BRUNER, Proc. U. S. Nat. Mus., XXX, p. 651, pl. 38, fig. 2 (1906).

Habitat.—The collection contains a male from Sapucay, Paraguay.

Genus XESTOTRACHELUS gen. nov.

The present genus, which is a member of the *Chromacris* group, is represented by at least two well defined species, the representatives of which are found in central and southwestern Brazil. They are *X. hasemani*, described herewith, and *Zoniopoda robusta* Bruner (ANN. CARNEGIE MUS., VIII, pp. 58, 60–62, Dec., 1911). The former may be considered as the type of the genus.

Composed of robust and brightly or strikingly colored insects a trifle above medium in size. With some of the general appearances of the representatives of both *Tæniopoda* and *Chromacris*, but with the thoracic structure and color-pattern of the latter. Head smooth, large, high or deep, and rounded above, and on sides back of the eyes. Latter comparatively small and not prominent, considerably longer than wide, but shorter than the anterior margin of the cheeks below them, separated at the vertex by a space fully equal to, or even greater than, the shortest diameter of the eyes; fastigium depressed, and with blunt convergent antero-lateral carinæ, which continue as the bounding walls of the frontal costa, the sulcation forming a rather prominent longitudinal canal, which is also continuous with that of the frontal costa. Frontal costa most prominent above, but continuous to the clypeus, its sides pinched just below the ocellus, but immediately widening. Front with a few coarse punctures and transverse rugæ or wrinkles. Antennæ a trifle robust, filiform, about 22- to 23-jointed, considerably exceeding the combined length of the head and pronotum, and under a magnifier exhibiting numerous coarse sensoria. Pronotum with the anterior lobe smooth and rounded above and the sides parallel, the hind lobe strongly divergent, rugoso-punctulate, the disk flattened; transverse sulci deep, coarse and continuous, separating the lobe into nearly equal rounded ridges, the front margin straight and quite widely reflexed, sometimes gently emarginate at middle, hind margin obtusangulate. Tegmina and wings somewhat abbreviated to fully developed and passing the tip of the abdomen, the venation coarse, but comparatively sparse. Legs rather long but not especially robust. The hind femora about reaching the tip of the abdomen. Interspace between the mesosternal lobes much broader than long, the inner margin of the lobes widely rounded. Prosternal spine elongate pyramidal, acuminate. Tip of male abdomen blunt, the last ventral segment short. Valves of the ovipositor hooked, of normal form and medium size.

The two known species of the genus may be separated as follows:

SYNOPSIS OF THE SPECIES OF XESTOTRACHELUS.

A. Only moderately robust. Tegmina complete, the apex broadly rounded, their veins greenish. Hind lobe of pronotum greenish yellow conspersed with black; hind tibiæ vinaceous........................*hasemani* sp. nov.

AA. Very robust. Tegmina a little abbreviated, more or less acuminate, their veins vinaceous yellow. Hind lobe of pronotum brunneo-testaceous, unicolorous; hind tibiæ internally and below flavous, above and externally coral-red..*robusta* Bruner.

77. **Xestotrachelus hasemani** sp. nov.

Moderately robust, but less so than the insect described by the present writer as *Zoniopoda robusta*.[4] Tegmina complete and with the veins olive-green.

Head but little wider than the anterior edge of the pronotum, its sides about parallel, not so robust as in this sex of *robusta*, the occiput evenly rounded. Other characters as described for the genus. Head perpendicularly banded or vittate. Middle of face, vertex, and occiput with a wide blackish band bordered on either side by a narrower one of yellow and deep orange-red, sides of head and posterior half of cheeks likewise colored, borders of eyes and outer face of mandibles dark greenish black. Eyes castaneous. Front lobe of the pronotum mostly shining pitchy black, the median carina narrowly flavous; hind lobe greenish olive, quite profusely conspersed and streaked with fuscous as in several species of *Diponthus*. Pleura olivaceous, strongly tinged with piceous. Anterior and middle legs fuscous with a vinaceous tinge above, flavid below. Hind femora dark olive-green with greenish yellow pennæ and carinæ, the genicular portion, excepting the lobes, infuscated, the latter vinaceous. Hind tibiæ vinaceous except at the base where they are grayish fuscous. Abdomen and lower side vinaceous. Antennæ black. Wings not spread but plainly red and black, and presumably of a similar pattern to those of *robusta*.

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[4] *Annals Carnegie Museum*, VIII, pp. 60–62 (1911).

Length of body, ♀, 35 mm., of pronotum 8 mm., greatest width of pronotum 8.5 mm., depth of lateral lobes, 7.25 mm., length of tegmina, 27.5 mm., length of hind femora, 18 mm.

Habitat.—Calhao, Rio Sapão, western Bahia, Brazil, February 7, 1908, a single female collected by J. D. Haseman. The type is deposited in the Carnegie Museum.

Genus ZONIOPODA Stål.

Zoniopoda STÅL, Recens. Orthopt., I, pp. 32, 51 (1873); BRUNER, Proc. U. S. Nat. Mus., XXX, p. 652 (1906); IB., Ann. Carnegie Mus., VIII, pp. 57–59 (1911).

78. **Zoniopoda iheringi** Pictet et Saussure.

Zoniopoda iheringi PICTET et SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 356 (1887).

Habitat.—One male from Santa Cruz de la Sierra, Bolivia, at an elevation of 450 meters above sea-level, collected by J. Steinbach. Also a female from Sapucay, Paraguay, during the month of April, where it was collected "on sides of mountains in woods" by J. D. Haseman.

79. **Zoniopoda basalis** sp. nov.

A moderately large almost uniformly grass-green locust, without definitely banded legs, and in which the hind wings are largely red or reddish. The characteristic feature of the species is an eye-like orange spot at the base of each of the tegmina.

Head about as wide as the anterior margin of the pronotum; the front and the lower portion of the cheeks somewhat rugulose, remainder smooth; occiput slightly elongate; eyes of moderate size, prominent, slightly longer than wide, separated above by a space about twice as wide as the frontal costa between the antennæ; anterior edge of cheeks one-third longer than the eyes; fastigium of the vertex gently depressed, the antero-lateral margins bordered by arcuate carinæ, the surface flat, depressed, rugoso-punctate, partially divided by a short anterior median longitudinal carina. Frontal costa with parallel sides, the surface rugose, fading below the median ocellus; facial or lateral carinæ not prominent, fading above at the lower edge of the antennal scrobes. Antennæ filiform, about as long as the hind femora. Pronotum strongly rugoso-punctate, the anterior and posterior lobes about equal in length; transverse sulci continuous, but not strongly impressed, the median carina present only as slightly elevated rugosities between the sulci; disk of hind lobe flattened, separated from the lateral lobes by a shoulder, but not carinate; front margin advanced upon the occiput, the middle rather widely emarginate; hind margin obtusangulate. Pleura rugoso-punctulate. Tegmina and wings fully developed, as long as the abdomen, the former coriaceous, closely and irregularly nerved, but with few longitudinal veins, which are separated from the closely veined areas as in *Titanacris*. Wings tinted with red. Legs about normal, the hind femora graceful, about three-fourths the length of the abdomen; hind tibiæ somewhat coarse, the inner spines much heavier than the outer ones, eleven in number, the external margin eight-spined. Prosternal spine small, pyramidal, the apex directed gently forward.

General color grass-green, the eyes and antennæ ferruginous. Tips of tibiæ and tarsi tinged with pink. Apical fourth of tegmina slightly infuscated. Immediate base of tegmina on costal field marked with an orange circular spot bordered by smoky brown. A narrow black band at base of genicular area of hind femora preceded by an indefinite pale band.

Length of body, ♀, 57 mm., of pronotum, 10.5 mm., of tegmina, 44 mm., of hind femora, 27 mm.

Habitat.—The only specimen at hand comes from Santa Cruz de la Sierra, Bolivia, where it was taken at an elevation of 450 meters by J. Steinbach. The type is in the Carnegie Museum.

This insect would fall in the first section of the synoptic table of species given on pages 57–58 of Vol. VIII, of the ANNALS under *cc.* with *juncorum*, from which it differs in wing-color, etc.

Not having seen specimens of the genus *Clarazella* Pictet and Saussure, which seems to be rather closely related to *Zoniopoda*, the writer hesitates to place any of the several green species thus far called *Zoniopoda* under the former genus. The species described above, however, is very much too large for the *Clarazella patagona* of Pictet and Saussure.

Genus PRIONACRIS Stål.

Prionacris STÅL, Bihang. till K. Svensk. Vet-Akad. Handl., V, No. 4, pp. 19, 55 (1878); BRUNER, Ann. Carnegie Mus., VIII, p. 62 (1911).

The genus *Prionacris* Stål belongs to tropical South America. Its representatives are most common in southern Brazil, Paraguay, and eastern Bolivia. Thus far three species have been described, and now a fourth is added. These forms may readily be separated by the subjoined synoptical key:

SYNOPSIS OF THE SPECIES OF PRIONACRIS.

A. Disk of wings tinged with rosaceous; general color of insect yellowish olive [New Grenada and other S. American regions] .... *compressa* Stål,

AA. Disk of wings not tinged with rosaceous; general color somewhat variable. usually dark olive or brownish.

- *b.* Pronotum bordered with a series of black maculations; the disk above also more or less strongly maculate with fuscous. Hind wings tinged with flavous [S. E. Bolivia] .... *atromaculata* sp. nov.
- *bb.* Pronotum not bordered with dark maculations, the disk likewise immaculate. Hind wings tinged with either blue or green.
  - *c.* Wings tinged with cærulean [Upper Amazons] .... *cærulescens* Bolivar.
  - *cc.* Wings tinged with green [Paraguay and southern Brazil] .. *erosa* Rehn

80. **Prionacris atromaculata** sp. nov.

Similar to the other species in general form, but differing from all of them in its yellow-disked, shorter wings, and by having its pronotum strongly bordered with black maculations. Body rather closely hirsute.

Head large and bulldog-like, reminding a person strongly of the representatives of the genus *Rhicnoderma*, its width decidedly greater than the anterior edge of the pronotum, rather closely and strongly punctulate, except on the occiput and upper portion of the cheeks. Eyes prominent in both sexes, plainly longer than wide, separated above by a space little greater than the longest diameter of one of the eyes; fastigium of the vertex rugoso-punctate, depressed, with a longitudinal medianal sulcus or depression bordered by inconspicuous antero-lateral carinæ, which meet in an obtuse angle slightly above the base of the antennæ; frontal costa flat, narrowing and fading below the ocellus, where its presence is indicated by a rounded ridge to the base of the clypeus. Lateral or facial carinæ not especially prominent, somewhat sinuose, but not divergent towards the lower corners of the front. Antennæ filiform, gently surpassing the hind margin of the pronotum. The latter rugoso-punctate, more or less compressed laterally, tectate; viewed in profile the crest gently arcuate and cut into about a dozen teeth; transverse sulci profound, the last situated somewhat in advance of the middle; the anterior middle somewhat obtuse-angulately advanced upon the occiput, the hind margin acute-angled. Tegmina and wings only gently passing the tip of the abdomen in both sexes. Legs normal. Hind tibial spines small, ten to eleven on the outer margin. Prosternal spine of moderate size, compressed, acuminate, directed gently to the rear.

General color of legs and body greenish yellow varied with brown. Pronotum conspicuously bordered with a series of roundish black spots, the disk brownish, and more or less regularly marked with similar spots; teeth of the crest likewise black. Tegmina fuscous, showing a tendency to transverse maculation, owing to the presence or absence of pale transverse nervures. Hind femora marked with black lunules and a narrow pregenicular transverse band, which is slightly interrupted above. Hind tibiæ flavous above, and gradually changing externally to gray lead-color and black, which is the tint of the inner side; the tarsi grayish above, pallid below. Antennæ brownish ferruginous. Eyes varying from flavous to castaneous.

Length of body, ♂, 41 mm., ♀, 46 mm.; of pronotum, ♂, 8 mm., ♀, 10 mm.; of tegmina, ♂, 34 mm., ♀, 38 mm.; of hind femora, ♂, 19 mm., ♀, 21 mm.

Habitat.—Santa Cruz de la Sierra, Bolivia, at an elevation of 450 meters (J. Steinbach, collector).

81. **Prionacris cœrulescens** Bolivar?

Prionacris cœrulescens Bolivar, Anal. Soc. Españ., XIX, p. 319 (1890).

Habitat.—A single female specimen from the "Provincia del Sara, Bolivia," is referred with some doubt to Bolivar's species. It was collected by J. Steinbach at an elevation of 450 meters above sea-level, and bears the accession number 4546, also "♀ No. 7 with its 4 ova." The latter, no doubt, were saved when the specimen was prepared.

Genus LOPHACRIS Scudder.

Lophacris SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, p. 353 (1869); PICTET et SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 363 (1887).

82. **Lophacris olfersi** (Burmeister).

Acridium olfersii BURMEISTER, Handb. Ent., II, p. 628, No. 4 (1838).

Lophacris olfersii SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, p. 354, No. 1 (1869); KIRBY, Syn. Cat. Orthopt., III, p. 378 (1910).

Titanacris olfersii PICTET et SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 363 (1887).

Acridium semirubrum SERVILLE, Ins. Orthopt., p. 653, No. 13 (1839).

Habitat.—The three males and one female at hand bear the simple label "South America." Undoubtedly they were taken in Brazil or the Guianas.

Having been preserved in spirits they have lost their beautiful and striking colors.

Genus TROPIDACRIS Scudder.

Tropidacris SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, p. 346 (1869); STÅL, Recens. Orthopt., I, pp. 31, 48 (1873); PICTET et SAUSSURE, Mitth. Schweiz. Ent. Ges., VII, p. 358 (1887); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 211, 240 (1907).

These, with one exception, largest of American locusts are found throughout the tropical portions of both North and South America, where at least six distinct species and two or three varieties are known. Great confusion exists concerning their synonymy and can only be approximately worked out with a good series of specimens from many localities.

83. **Tropidacris collaris** (Stoll).

Gryllus (Locusta) collaris STOLL, Spectres Saut., p. 39, pl. 21*b*, fig. 80 (1813).

For additional synonymy see Kirby's *Synonymic Catalogue of the Orthoptera*, Vol. III, p. 379.

Habitat.—There are six specimens at hand, coming from various Brazilian localities.

84. **Tropidacris dux** (Thunberg).

Gryllus dux THUNBERG, Mém. Acad. Petersb., IX, pp. 393, 402, No. 6 (1824).

For further synonymy see Kirby's Catalogue.

Habitat.—Specimens are at hand from La Pinta, Venezuela; and Santa Cruz de la Sierra, Bolivia; one male and three females.

Genus OPHTHALMOLAMPIS Saussure.

Ophthalmolampus SAUSSURE, Rev. Zool., (2), Vol. XI, p. 394 (1859); STÅL, Bihang till Svensk. Akad. Handl., V, p. 42 (1878).

The representatives of the present genus are fairly numerous throughout tropical South American countries, where they live among the exuberant vegetation in and about the edges of the extensive forests, which are characteristic of that region. At least a dozen so-called species are already known, while another is now added. The genus is most closely related to *Nautia*, *Tæniophora*, and *Trybliophorus*. There is also indication of one or two additional genera among this group of locusts, which is characteristic of the tropical American jungles. The species of *Ophthalmolampis* may be separated by the following synoptical table:

SYNOPSIS OF THE SPECIES OF OPHTHALMOLAMPIS.

A. Tegmina and wings more or less abbreviated, varying from rudimentary to slightly less than the length of the abdomen.
  b. Tegmina and wings rudimentary, lateral, their dorsal edges distant [Peru]. *cinctipennis* Stål.
  bb. Tegmina and wings not rudimentary, their dorsal edges overlapping.
    c. Antennæ rather slender and filiform, usually not much, if any, longer than the hind femora.
      d. Pronotum provided with two longitudinal pale lines on each side of the middle, two dorsal and one on each lateral lobe.
        e. Size smaller (♀, 19 mm.). Antennæ fusco-violaceous [Northern Brazil]. . . . . *geniculata* Stål.
        ee. Size larger (♀, 26 mm.). Antennæ blood-red [Ega (Amazonas)]. . . . . *dichroa* Gerstæcker.
      dd. Pronotum furnished with but a single or no longitudinal pale lines on each side of the middle.
        e. One such line present on each side of the disk of the pronotum.
          f. Longitudinal pronotal lines white.
            g. Size smaller (♀, 24 mm.). Hind femora obscurely colored [Guiana]. . . . . *colubri* Saussure.
            gg. Size larger (♀, 27 mm.). Hind femora greenish yellow, the tubercles of upper carinæ black [Eastern Bolivia]. . . . . *albolineata* sp. nov.
          ff. Longitudinal pronotal lines flavous [Cumbase, Peru]. *punicea* Gerstæcker.
        ee. Longitudinal pale lines wanting from pronotum and tegmina [Itaituba, Amazonas]. . . . . *modesta* Gerstæcker.

cc. Antennæ coarse or robust, decidedly longer than the hind femora.
  d. Antennæ deep black [Demerara, British Guiana]. *vitta-genæ* Bruner.
  dd. Antennæ deep carmine-red [Fonteboa (Amazonas)]. *speciosissimus* Gerstæcker.

AA. Tegmina and wings fully developed, passing the tip of the abdomen.[5]
  b. Size smaller (♀, 25 mm.). Head black [Bogotá, Colombia]. *trochilus* Gerstæcker.
  bb. Size larger (♀, 33–34 mm.). Head olivaceous or ferruginous.
    c. Head, prothorax, pleura, sternum, front and middle legs, and outer side of hind femora ferruginous. Inner side of latter reddish purple, the knees orange-colored and the tibiæ next to the tarsi sea-green [Iquitos (Amazonas)] .... *pulchripes* Gerstæcker.
    cc. Head, prothorax, and tegmina cinnamon or olive-green. Sternum and legs ferruginous, the outer side of the anterior tibiæ strigate with shining black. Hind femora blackish olive, their superior carina, an external lower stripe, and a preapical internal band, ferruginous; the tibiæ blackish olive [Brazil]........... *bracteata* Gerstæcker.

85. **Ophthalmolampis albolineata** sp. nov.

Most nearly related to *O. colubri* Saussure, but somewhat larger and differently colored. Its habitat, too, is quite widely removed from that of Saussure's species.

Head about as wide as the anterior portion of the pronotum, a little shorter than the front lobe of the latter; face decidedly wider than long, the front coarsely and deeply punctulate below the transverse groove; eyes large and prominent, strongly divergent, separated at the vertex by a space no greater than the diameter of the second antennal joint; the fastigium depressed, rather small, plainly longitudinally sulcate; frontal costa smooth, not especially prominent between the antennæ, where it is about two and one-fourth times the width of the narrowest part of the vertex; antennæ slender, filiform, about as long as the tegmina; occiput punctulate. Pronotum subcylindrical, rugoso-punctulate, the posterior lobe gently expanding to the rear; transverse sulci well defined and severing the lateral pallid lines of the disk; anterior edge widely and angulately emarginate at middle, the hind margin broadly rounded. Tegmina for the most part coriaceous. Pleura strongly and coarsely punctulate, closely veined, gently tapering, about two-thirds the length of the abdomen. Hind femora robust at base, the carinæ prominently serrated, and the disk crenulately pinnate; the genicular lobes large and somewhat acuminate. Hind tibiæ and tarsi profusely hirsute, the spines of former small, seven in number externally, the latter with the second joint longer than the first and about equal to the third; prosternal spine minute, acuminate, located on a heavy quadrate base formed of the anterior half of the sternite. Mesosternal lobes separated by a space a little wider than the lobes and about as long as broad. Valves of the ovipositor slender, the upper pair straight and blunt, the lower ones slender, acuminate, about one-half the length and partly hidden between the basal half of the upper heavier pair.

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[5] The species *yersini* Saussure very likely belongs in the present section also, but the description is too incomplete to permit of its tabulation.

General color pale greenish yellow, the occiput, disk of pronotum and dorsal area of tegmina cinnamon-brown. Face at base of antennæ provided on each side with a glossy pale or milky white area, which gradually widens and reaches the lower hind angle of the cheeks; another similar line commences with the middle of the hind margin of each eye and continues along the lateral margins of the disk of the pronotum to the base of the tegmina. Latter provided with two white lines embracing one of carmine, edged below by black, the superior white line also edged above by a black line; costal margin rather widely hyaline. Hind femora golden yellow externally, the carinal tubercles black; genicular area strongly infuscated, but with the lunules vinaceous and the lobes grayish olive. Hind tibiæ vinaceous, becoming deep purple internally towards the apex, near base colored like the genicular lobes of the femora, tarsi ferruginous. Antennæ black with two basal joints pallid.

Length of body, ♀, 27 mm., of pronotum, 6.2 mm., of tegmina, 12.5 mm., of hind femora, 14 mm.

Habitat.—Sta. Cruz de la Sierra, Bolivia, a single female specimen taken by J. Steinbach at an elevation of 450 meters above sea-level. The type is deposited in the Carnegie Museum.

Genus LEPTYSMA Stål.

Leptysma STÅL, Recens. Orthopt., I, pp. 42, 85 (1873); BRUNER, Proc. U. S. Nat. Mus., XXX, p. 657 (1906); IB., Ann. Carnegie Mus., VIII, p. 71 (1911).

86. **Leptysma dorsalis** (Burmeister)?

Mesops dorsalis BURMEISTER, Handb. Ent., II, p. 610 (1838).

Leptysma dorsalis BRUNER, Ann. Carnegie Mus., VIII, p. 72 (1911).

Habitat.—There is a single male specimen of the genus *Leptysma* at hand, which was collected at Santa Cruz de la Sierra, Bolivia. It is referred to Burmeister's species with some doubt.

87. **Leptysma obscura** (Thunberg).

Truxalis obscura THUNBERG, Nova Acta Upsala, IX, pp. 77, 79 (1827).
Leptysma obscura STÅL, Recens. Orthopt., I, p. 86 (1873); BRUNER, Proc. U. S. Nat. Mus., XXX, p. 658 (1906).

Habitat.—There is likewise a male of this species in the collection. It comes from the same locality as the preceding, and was taken by J. Steinbach at an elevation of 450 meters above sea-level.

Genus STENACRIS Walker.

Stenacris WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 651 (1870); KIRBY, Syn. Cat. Orthopt., III, p. 413 (1910).

The insects which comprise the genus *Stenacris* are quite similar in their general appearance to those which are referred to the genus *Opsomala* of Serville. In the former genus the last ventral segment of the male abdomen is quite complex in structure, and varies very distinctly among the different species, while in the representatives of the latter genus it is quite simple and varies but little. About a dozen forms of *Stenacris* have been recognized heretofore. They come from the two Americas, where representatives occur between the parallels of 35° north and 30° south of the Equator.

88. **Stenacris cylindrodes** (Stål).

Opsomala cylindrodes STÅL, Eugenies Rosa, Orthopt., p. 325, No. 67 (1860).
Arnila cylindrodes STÅL, Recens. Orthopt., I, p. 85, No. 1 (1873).
Stenacris cylindrodes KIRBY, Syn. Cat. Orthopt., III, p. 414 (1910).

Habitat.—A single female specimen of what is taken to be this locust is at hand from Barreiros, Bahia, Brazil. It was collected January 3, 1908, by J. D. Haseman.

Genus OPSOMALA (Serville).

Opshomala SERVILLE, Ann. Sci. Nat., XXII, p. 267 (1831).
Opsomala BURMEISTER, Handb. Ent., II, p. 610 (1838).

See Kirby in *Syn. Cat. Orthopt.*, III, p. 410 (1910), and Bruner, ANN. CARNEGIE MUS., VIII, p. 79 (1911), for additional synonymy.

89. **Opsomala interior** (Bruner).

Arnilia interior BRUNER, Biol. Cent.-Amer., Orthopt., II, p. 254 (1908).
Opsomala interior KIRBY, Syn. Cat. Orthopt., III, p. 410 (1910); BRUNER, Ann. Carnegie Mus., VIII, p. 81 (1911).

Habitat.—A pair of locusts coming from Puerto Suarez, Bolivia, are referred here. They were collected during the period including November, 1908, to January, 1909, by J. Steinbach. They come from a locality with an elevation of 150 meters above sea-level.

Genus OXYBLEPTELLA Giglio-Tos.

Oxybleptella GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 33 (1894); BRUNER, Ann. Carnegie Mus., VIII, pp. 70, 81 (1911).

90. **Oxybleptella sagitta** Giglio-Tos.

Oxybleptella sagitta GIGLIO-TOS, l. c., pl. 1, fig. 7 (1894).

For further synonymy see Bruner, l. c.

Habitat.—There are two female specimens of this genus before me as I write, both of which I am inclined to refer to Giglio-Tos' species. One was taken at Taquara, Brazil, and the other at Santa Cruz de la Sierra, Bolivia. The former specimen is a trifle smaller than the measurements given for this sex by Giglio-Tos, *i. e.*, length of body, 21.5 mm., of tegmina, 15 mm., of hind femora, 10 mm. It was collected in September, and is also labeled "Accession No. 2966." The other specimen is very noticeably larger, even exceeding the measurements given by Rehn for his *Oxybleptella pulchella* (*Proc. U. S. Nat. Mus.*, XXXVI, pp. 136–139, figs. 21, 22, 23 (1909)). This last specimen measures as follows: Length of body, 25 mm., of tegmina, 18 mm., of hind femora, 12 mm. In color the two insects are somewhat similar, only differing in minute particulars. The eyes of the larger individual are conspicuously banded parallel to their anterior margin alternately with brown and yellow, there being about ten such bands on the anterior two-thirds of the eye.

Genus INUSIA Giglio-Tos.

Inusia GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 30 (1897); BRUNER, Journ. N. Y. Ent. Soc., XIV, p. 151 (1906); IB., Biol. Cent.-Amer., Orthopt., II, pp. 212, 259 (1907–8).

This is another tropical American genus of the subaquatic locusts. At least eight species have thus far been recognized. Representatives occur from middle Mexico to northern Argentina, as well as in some of the West Indian islands. Two of the species occur in the material now at hand.

91. **Inusia gracillima** Giglio-Tos.

Inusia gracillima GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302 p. 31 (1897); BRUNER, Biol. Cent.-Amer., Orthopt., II, p. 259 (1908).

Habitat.—The only specimen now before me comes from Sapucay, Paraguay. It is a male, and was taken by Haseman during the month of April.

92. **Inusia pallida** Bruner.

Inusia pallida BRUNER, Proc. U. S. Nat. Mus., XXX, p. 660 (1906); IB., Biol. Cent.-Amer., Orthopt., II, p. 259 (1908).

Habitat.—There is a male of this species at hand which was taken at Santa Cruz de la Sierra, Bolivia. It comes from an altitude of 450 meters above sea-level, and was collected by J. Steinbach.

Genus OXYBLEPTA (Stål).

Stenopola STÅL, Recens. Orthopt., I, p. 84 (1873) in part.
Oxyblepta STÅL, loc. cit., p. 84.

93. **Oxyblepta puncticeps** (Stål).

Opsomala puncticeps STÅL, Eugen. Resa, Orthopt., p. 325 (1860).
Stenopola (*Oxyblepta*) *puncticeps* STÅL, Recens. Orthopt., I, p. 84 (1873).
Oxyblepta puncticeps KIRBY, Syn. Cat. Orthopt., III, p. 415 (1910).

Habitat.—The present collection contains two females of this species. One comes from Puerto Suarez, Bolivia, and the other from Sapucay, Paraguay.

94. **Oxyblepta bohlsi** (Giglio-Tos).

Stenopola bohlsii GIGLIO-TOS, Zool. Jahrb., Syst., VIII, p. 813 (1895).
Oxyblepta bohlsii KIRBY, Syn. Cat. Orthopt., III, p. 416 (1910).

Habitat.—A male specimen was taken at Santa Cruz de la Sierra, Bolivia, at an elevation of 450 meters above sea-level by J. Steinbach.

Genus HENIA Giglio-Tos.

Henia GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XIII, No. 311, pp. 45, 55 (1898); BRUNER, Journ. N. Y. Ent. Soc., XIV, p. 152 (1906).

The only species of the genus known to the present writer is the following:

95. **Henia frenata** (Marschall).

Gryllus frenatus MARSCHALL, Ann. Wien. Mus., I, p. 212, No. 5, pl. 18, fig. 4 (1835).
Henia frenata GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XIII, No. 311, p. 56 (1898).

Habitat.—The collection contains two specimens, a pair, which are referred here. One is a nymph, and was taken during December, the other is mature, and was collected in July.

The specimens examined by the writer vary considerably in some structural features, and represent a single variable species, or else two or more distinct forms.

Genus PARACORNOPS Giglio-Tos.

Paracornops GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 31 (1894).

Cornops STÅL (*nec* Scudder), Bihang. Svensk. Akad. Handl., V, No. 4, p. 40 (1878).

At least six species of the genus *Paracornops* are known. They are scattered over southern Brazil and Paraguay.

96. **Paracornops aquaticum** Bruner.

Paracornops aquaticum BRUNER, Proc. U. S. Nat. Mus., XXX, p. 662 (1906).

Habitat.—This species is represented by a male specimen which J. D. Haseman secured on December 6, 1908, at Morro do Pará, Bahia, Brazil.

All the species of the genus *Paracornops* appear to be fairly common at certain localities where they frequent aquatic plants. They can be collected by beating such vegetation.

Genus COPIOCERA Burmeister.

Copiocera BURMEISTER, Handb. Ent., II, pp. 602, 611 (1838); STÅL, Bihang. Svensk. Akad. Handl., V, No. 4, p. 38 (1878); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 213, 263 (1907, 1908).

Glyphacris WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 653 (1870).

The genus *Copiocera* is composed of medium-sized, slender, elongate locusts, in which the hind tibiæ are without the lamellate edges common to the insects belonging to several of the genera just mentioned on the foregoing pages. These insects also have the valves of the ovipositor of the females slender and finger-like, without digging edges. With the exception of a single species, all of its representatives belong to tropical South America. Eight species have been described heretofore, while a ninth is now added.

97. **Copiocera austera** Gerstæcker?

Copiocera austera GERSTÆCKER, Mitth. Ver. Neu Vorpomm., XX, p. 34, No. 28 (1889).

Habitat.—Three female specimens taken at Villa Bella, Bolivia, on October 10th, are referred here with some doubt. They were collected by J. D. Haseman, who has furnished the museum with a number of very interesting things.

98. **Copiocera collaris** sp. nov.

A decidedly smaller species than those heretofore described. Bright olive-green with a conspicuous large orange-red patch on each side of the pronotum and a similar tint on the veins of the costal area of the tegmina.

Head moderately large, smooth, its length nearly that of the pronotum, and its width a little greater than the anterior width of the pronotum; eyes quite prominent, but not large, separated above by a space a little wider than the frontal costa between the antennæ; the fastigium a little depressed, about as long as wide, and bounded antero-laterally by a well-marked carina; ocelli conspicuous, flame-red. Antennæ dusky, filiform, fully as long as the hind femora, their last four or five joints pallid. Frontal costa fairly prominent between the antennæ, fading below the ocellus, where it is present only as a tumid ridge which widens rapidly towards the clypeus. Lateral or facial carinæ quite prominent, gently sinuose above and strongly divergent below. Pronotum fairly strongly rugoso-punctate, subcylindrical, the hind lobe only gently divergent posteriorly, the transverse sulci prominent, continuous, the last decidedly back of the middle, the anterior edge rather broadly margined, roundly and broadly advanced upon the occiput, hind margin subangulate, the median carina present only on the hind lobe, where it is quite plain on the flattened disk. Tegmina and wings long and narrow, the apex of the former subacuminate. Anterior and middle legs slender; hind femora moderately robust, evenly tapering, the tibiæ much shorter than the femora, and only five- or six-spined externally. Valves of the ovipositor hirsute, cylindrical, and finger-like, the lower pair the longer and larger, straight, the upper ones slender and curved downward between the basal part of the upper ones. Prosternal spine strongly transverse, its apex arcuate, entire.

Color of insect prevailingly pale olive-green, marked with reddish on the pronotum and tegmina as indicated above. Abdomen without reddish markings at sides or above, but becoming darker in the dorsal area. Hind femora, including the genæ, uniformly greenish; hind tibiæ dark plumbeous. Wings infuscated, the tegmina with olivaceous veins and veinlets on the disk and dorsal areas, but reddish or purplish on the costal area.

Length of body, female, 34 mm., of pronotum, 5.75 mm., of tegmina, 31.5 mm., of hind femora, 15 mm., of hind tibiæ, 11 mm.

Habitat.—The single specimen at hand was taken by J. Steinbach in the Province del Sara, Bolivia, at an altitude of 450 meters above sea-level. The type is the property of the Carnegie Museum.

Genus PŒCILOCLŒUS Bruner.

Pœcilocloeus BRUNER, Tire des Horæ, Soc. Ent. Rossicæ, XXXIX, p. 11 (1910).

99. **Pœcilocloeus flavipicta** sp. nov.

Related to *P. ornatus* Bruner[6] from Peru, but quite distinct from that species in a number of respects. The characteristic features, however, seem to be the slightly larger size and brighter coloration. Entire body rather profusely hirsute, especially the tibiæ and tarsi.

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[6] *Tiré des Horæ Societatis Entomologicæ Rossicæ*, Vol. XXXIX, pp. 11–12.

In the make-up of the forms in the paper containing the description of this species the printer left out the following parts of the manuscript between lines 18 and 19 on page 12 of the reprint. Since this omission renders the description of *P. ornatus*, as well as of the new genus *Adelotettix* ambiguous, both descriptions are here copied in full:

"**Pœcilocloeus ornatus**, sp. n.

"Size medium, the head of moderate size, about as wide as the anterior edge of the pronotum which embraces it almost to the eyes; the vertex rather narrow, in the female a trifle less than the width of the frontal costa between the base of the antennæ; the fastigium subhorizontal, a little longer than wide, its disk flattened, and provided with a minute transverse impression just back of the extreme anterior edge where it meets the upper extremity of the frontal costa. Latter fairly prominent between the antennæ, not sulcate above the ocellus, but provided with a few punctures, much less prominent below and shallowly sulcate, fading before reaching the clypeus; facial carinæ not especially prominent, divergent. Eyes not large, somewhat bulging, a little longer than wide. Anterior lobe of the pronotum subcylindrical, the hind lobe divergent, a little more than one-half the length of the anterior one, but much more profusely punctulate; anterior edge rather coarsely margined, undulate, hind edge of disk obtusangulate, the transverse sulci profound. Tegmina coriaceous, rather coarsely and profusely veined, about as long as the abdomen, the apex rounded; wings vitreous, infuscated apically, the apex broad, nearly truncate. Abdomen carinate, cylindrical, nearly equal throughout, the apex rather abruptly acuminate; the valves of the ovipositor slight, rather straight, and the lower pair embraced by the upper ones. Prosternal spine gross, transverse, quadrate, with a minute wart-like protuberance at middle near the posterior edge.

Head a little wider than the anterior edge of the pronotum, the occiput smooth, well rounded and slightly elevated above the plane of the pronotum; eyes prominent, subglobose, the greater diameter plainly exceeding the length of the anterior edge of the cheeks, separated on the vertex above by a space scarcely if any greater than the diameter of the basal antennal joint; fastigium subhorizontal, flat, about as long as wide, separated from the frontal costa by a transverse elevated ridge or carina; frontal costa prominent between the antennæ, viewed laterally evenly rounded, its sides parallel to just below the ocellus, where it becomes much narrower and inconspicuous to the base of the clypeus, plane above, sulcate below; front rather closely

Space between meso- and meta-sternal lobes transverse. Hind femora rather slender, their apex about equalling that of the abdomen, genicular lobes slightly acuminate, the hind tibiæ six-spined externally, eight-spined internally, the first and second joints of their tarsi subequal; legs, and in fact the entire body, rather strongly hirsute. Antennæ filiform, about as long as the hind femora.

"Color quite gaudy; the head and pronotum dull black with a greenish tinge in some lights, conspicuously marked with dull orange on the head, the lower edges of the cheeks, the lateral carinæ of face, the frontal costa, a considerable portion of the clypeus, sides of the mandibles, a dot back of the middle of each eye, the disk of the fastigium and a V-shaped mark on the occiput just back of the vertex, on the pronotum a large patch near the middle of each lateral lobe and one at center of the disk both in front and behind; upper half of the pleura and dorsum of the abdomen nearly to its tip dull black; below flavous, inclining to dull orange. Tegmina on their basal two-thirds metallic blue-green with a faint longitudinal discal streak of flavous, the apical portion brownish, semi-membranous. Wings vitreous, slightly infuscated apically and towards the posterior border. Hind femora olivaceous, varied with flavous internally and below, on the disk externally the pinnæ brownish, genicular area and immediate base of tibiæ red, the remainder of the latter dull cinereous, becoming infuscated apically and at the extreme apex together with their tarsi coralline. Anterior and middle legs dark flavous with faint traces of fuscous annulations. Antennæ fuscous tinged with red, the extreme apex pallid.

"Length of body, ♀, 24.5 mm., of pronotum, 4 mm., of tegmina, 15 mm., of hind femora, 12.5 mm.

"This insect so far as its coloration and wing length are concerned seems to be more closely related to *Zosperamerus* than it is to *Anniceris*, although its relatively much shorter hind tarsi remind one of the latter genus and *Leioscapheus* of Central America. Evidently a careful study of all the forest-dwelling locusts of middle America will bring to light a large number of additional species and genera of this group.

"**Adelotettix** gen. nov.

"A genus of moderately large, coarse dull colored locusts related to both *Abila* and *Adimantus* but quite distinct from both of these genera in a number of respects as may be seen by reference to the following diagnosis:

and strongly rugoso-punctulate; lateral or facial carinæ prominent, quite strongly divergent below. Antennæ slender, filiform, about as long as the hind femora, the basal joint quite robust and noticeably elongate. Pronotum rather evenly and closely punctulate, selliform, the anterior lobe about one-half longer than the posterior one, the median carina visible in front of the first and last transverse sulci, which are fairly deeply impressed; disk of hind lobe somewhat flattened, the posterior margin rounded. Tegmina coriaceous, rather profusely veined, nearly as long as the abdomen, of moderate width, the apex rounded; wings as in *ornatus*. Hind femora of moderate robustness, about as long as the abdomen, the carinæ smooth, pinnæ of outer disk regular, the genicular portion rather large, the lateral lobes rounded below and rectangulate at apex; hind tibiæ and tarsi rather large and robust; the former with seven spines externally and eight internally, the latter with joints one and two about equal in length. Valves of the ovipositor more robust than in *ornatus*. Prosternal spine quadrate at base, rapidly tapering, the apex acuminate;

"Face, pronotum, pleura and underside of meso- and meta-thorax rather closely and profoundly punctulate. The head large, exserted, the fastigium horizontal, flat and provided at front with a distinct median carina; eyes moderately large, elliptical, separated in the females by a space somewhat less than the width of the frontal costa between the antennæ. Frontal costa prominent above between the antennæ, smooth, in nowise sulcate, but provided with a few small punctures at its sides near the upper extremity, below the ocellus narrowed, gently sulcate and fading towards the clypeus. Antennæ and ocellus situated higher up on the front and closer than usual to the fastigium; the former moderately heavy but filiform, about 25-jointed, the apical four or five pallid as in *Copiocera*, *Rhicnoderma* and several other tropical American genera; lateral carinæ of the face prominent, evenly and strongly divergent, extending from the outer edge of the antennal sockets to near the apex of the mandibles. Pronotum with the two lobes about equal in length, the anterior lobe cylindrical, the posterior one divergent, the disk of the latter flat and with its hind edge obtusangulate, front edge broadly margined and roundly advanced upon the occiput, in some species with the middle shallowly and roundly emarginate. Tegmina surpassing the apex of abdomen, with parallel edges, coriaceous, rather profusely veined basally, but more sparsely so apically, the apex rounded. Hind femora rather short and fairly robust, considerably shorter than the abdomen, with smooth carinæ and regular pinnæ on external disk, the genicular lobes more or less angulate; hind tibiæ plainly shorter than the femora; robust, seven- or eight-spined on outer edge, the apical one wanting; the second tarsal joint about one-half the length of the first. Anterior and middle legs rather short. Prosternal spine somewhat robust, directed gently to the rear, its apex blunt. Interspace between the mesosternal lobes transverse. Valves of the ovipositor normal. Body and legs somewhat hirsute."

the space between mesosternal lobes slightly transverse, but narrower than the lobes themselves.

General color above olivaceous, becoming almost black on the pronotum and upper portion of pleura; legs mostly, lower part of pleura, abdomen, except immediate dorsum and underside, bright citron-yellow. Pronotum conspicuously marked with six large patches of lemony-ellow, two on each side, and two on the disk. Face, fastigium, vertex, and anterior portion of occiput inclining to flavous, the posterior portion of head dark olive. Tegmina olivaceous, becoming darker on costal field and towards the apex, where they shade into fuscous. Wings apparently somewhat infuscated. Genicular portion of hind femora ferruginous, the lunules somewhat infuscated; hind tibiæ and tarsi vinous red. Antennæ pale ferruginous, the apex concolorous.

Length of body, ♀, 28 mm., of pronotum, 5 mm., of tegmina, 18 mm., of hind femora, 15 mm., of hind tibiæ, 12.5 mm.

Habitat.—The only specimen at hand, the type, comes from Santa Cruz de la Sierra, Bolivia, where it was taken at an elevation of 450 meters above sea-level by J. Steinbach. It is the property of the Carnegie Museum.

The type of *P. ornatus* is deposited in the Museum of Natural History, University of Moscow, Russia.

Genus HOLMALOSAPARUS Rehn.

Holmalosaparus REHN, Proc. Acad. Nat. Sci. Phila., LX, p. 17 (1908); BRUNER, Ann. Carnegie Mus., VIII, p. 90 (1911).

The locusts which belong to the present genus resemble quite closely the species of *Phæoparia*, but differ in a number of diagnostic characters. Only two forms have thus far been recognized. As stated in a former paper (ANNALS, VIII, p. 90) these insects belong to southern Brazil.

100. **Homalosaparus sordidatus** Rehn.

Homalosaparus sordidatus REHN, Proc. U. S. Nat. Mus., XXXVI, pp. 155–157, figs. 36, 37 (1909); BRUNER, Ann. Carnegie Mus., VIII, p. 91 (1911).

Habitat.—Only a single female specimen of this locust is contained in the collection now being reported upon. It comes from Guaicuhy, Minas Geraes, Brazil, where it was collected on December 15, 1907, by J. D. Haseman.

Genus BUCEPHALACRIS Giglio-Tos.

Bucephalacris GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 30 (1894); BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 641, 664 (1906); IB., Ann. Carnegie Mus., VIII, p. 91 (1911).

The species of this genus, as stated in a former paper appearing in the ANNALS, are confined to a limited area in northern Argentina, Paraguay, southern Brazil, and eastern Bolivia. They are medium-sized insects of rather dull color and evidently live among the undergrowth in and about the margins of tropical forests. A synoptic key for the separation of the known species is given on page 91 of volume VIII of the ANNALS.

101. **Bucephalacris paraguayensis** Bruner.

Bucephalacris paraguayensis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 665 (1906).

Habitat.—A single female specimen is at hand from Santa Cruz de la Sierra, Bolivia. It was collected by J. Steinbach at an elevation of 450 meters above sea-level.

Genus COSCINEUTA Stål.

Coscineuta STÅL, Recens. Orthopt., I, pp. 33, 52 (1873); GIGLIO-TOS, Ann. Mus. Zool. Anat. Comp. Torino, XIII, No. 311, p. 45 (1898); BRUNNER V. WATTENWYL, Boll. Mus. Genova, XXXIII, p. 138 (1893); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 214, 273 (1908).

The present genus is composed of medium-sized and moderately robust insects of rather striking colors. Four species have been referred here. They occur in tropical America, where representatives have been recorded from Nicaragua, Island of St. Bartholomew, U. S. of Colombia, the Upper Amazons, and Peru.

102. **Coscineuta coxalis** (Serville).

Acridium coxale SERVILLE, Ins. Orthopt., p. 672 (1839).

Coscineuta coxalis STÅL, Recens. Orthopt., I, p. 52, No. 1 (1873); BRUNER, Biol. Cent.-Amer., Orthopt., II, p. 273, No. 1 (1908).

Habitat.—The present collection contains two females of this locust. They come from Bogotá, Colombia, and form a part of accession number 2306. Both specimens lack hind legs and antennæ.

Genus PHÆOPARIA Stål.

Phæoparia STÅL, Recens. Orthopt., I, pp. 36, 56 (1873); GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XIII, No. 311, p. 46 (1898); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 215, 277 (1908).

Phæoparia is another tropical American genus of locusts. They are rather above medium in size, and all of them are strongly ferruginous in coloration. They evidently inhabit the forests and live among fallen leaves, or on the dead and dry leaves which cling to various kinds of herbage growing in such localities.

103. **Phæoparia linea-alba** (Linnæus).

Gryllus (*Locusta*) *linea-alba* LINNÆUS, Mus. Ludov. Ulric., p. 150, No. 40 (1764).
Phæoparia linea-alba STÅL, Recens. Orthopt., I, p. 57, No. 1 (1873); BRUNER, Biol. Cent.-Amer. Orthopt., II, p. 278 (1908).
Truxalis sanguineus THUNBERG, Mém. Acad. Petersb., V, p. 270 (1815).

Habitat.—The collections before me now contain one male and two females of this insect. They come from Bogotá, Colombia, and Dutch Guiana.

Genus ADIMANTUS Stål.

Adimantus STÅL, Bihang. Svensk. Akad. Handl., V, No. 4, p. 38 (1878); GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XIII, No. 311, p. 46 (1898); BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 642, 666 (1906).

Three so-called forms, or species, of locusts are referred to the present genus. They are above medium in size and at the same time quite gaudily colored. The genus is confined to a region covering Paraguay, northern Argentina, eastern Bolivia, and southern Brazil.

104. **Adimantus ornatissimus** (Burmeister).

Oxya ornatissima BURMEISTER, Handb. Ent., II, p. 636, No. 4 (1838).
Adimantus ornatissima KIRBY, Syn Cat. Orthopt., III, p. 426 (1910).

Habitat.—There are specimens at hand coming from St. Logoas, Minas Geraes, Brazil; and Province del Sara and Santa Cruz de la Sierra, Bolivia,—four males and six females, collected by J. D. Haseman and J. Steinbach.

These locusts are said to feed on sugar-cane and at times to become quite destructive.

Genus ZYGOCLISTRON Rehn.

Zygoclistron REHN, Ent. News, XVI, p. 39 (1905); BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 642, 666 (1906); IB., Ann. Carngie Mus., VIII, p. 89 (1911).

The species of *Zygoclistron* occur over Paraguay, southern Brazil, and eastern Bolivia. As stated in a former paper (ANNALS, VIII, p. 99) these insects are probably partial to open forests, where they live among fallen leaves, etc.

105. **Zygoclistron trachystictum** Rehn.

Zygoclistron trachystictum REHN, Ent. News, XVI, pp. 39–41, figs. 1–3 (1905); IB., Proc. Acad. Nat. Sci. Phila., LIX, p. 181 (1907).

Habitat.—Two males of this locust are at hand. They come from Santa Cruz de la Sierra, Bolivia, where they were taken by J. Steinbach.

Genus ORTHOSCAPHEUS Bruner.

Orthoscapheus BRUNER, Proc. U. S. Nat. Mus., XXX, p. 671, (1906); IB., Ann. Carnegie Mus., VIII, p. 104 (1911).

Orthoscapheus is most closely related to *Jodacris* of Giglio-Tos, and, so far as at present known, contains but a single representative.

106. **Orthoscapheus roseipennis** Bruner.

Orthoscapheus roseipennis BRUNER, Proc. U. S. Nat. Mus., XXX, p. 672 (1906).
? *Osmilia coriacea* GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 18 (1894).

Habitat.—The collections coming from both Puerto Suarez, Bolivia, and Sapucay, Paraguay, contain examples of this species. (See remarks concerning this insect in the ANNALS, VIII, p. 104.)

Genus JODACRIS Giglio-Tos.

Jodacris GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XII, No. 302, p. 32, note (1897); BRUNER, Ann. Carnegie Mus., VIII, pp. 104, 105 (1911).

107. **Jodacris ferruginea** (Giglio-Tos).

Anniceris ferrugineus GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 30 (1894) in part.
Jodacris ferruginea GIGLIO-TOS, l. c., XII, No. 302, pp. 32, 33, footnote (1897) in part; BRUNER, Proc. U. S. Nat. Mus., XXX, p. 672 (1906); IB., Ann. Carnegie Mus., VIII, p. 105 (1911).

Habitat.—There are two females in the collection made at Santa Cruz de la Sierra, Bolivia, by J. Steinbach.

Genus ABRACRIS Walker.

Abracris WALKER, Cat. Dermapt. Salt. Brit. Mus., IV, p. 642 (1870); KIRBY, Syn. Cat. Orthopt., III, p. 428 (1910); BRUNER, Ann. Carnegie Mus., VIII, p. 107 (1911).
Omalotettix BRUNER, Proc. U. S. Nat. Mus., XXX, p. 642 (1906).

The species of *Abracris* are quite generally distributed over most of tropical America, where they are fairly common in and about the edges of the more open forests. These insects are rather small and inconspicuous, being gray and dull brown in color. Living, as they do, among the litter on and near the ground, they are fairly well protected from birds and other vertebrate enemies, hence are the common "grasshoppers" in their respective regions. At least seven species have already been recognized, and a careful study of these insects throughout the regions, where the genus occurs, will no doubt add several others.

108. **Abracris nebulosa** (Bruner).

Jodacris (?) nebulosa BRUNER, Locusts of Argentina, p. 67 (1900).
Omalotettix nebulosa BRUNER, Proc. U. S. Nat. Mus., XXX, p. 673 (1906).
Abracris nebulosa KIRBY, Syn. Cat. Orthopt., III, p. 428 (1910).
Anniceris ferruginea GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, No. 184, p. 30 (1897) in part.

Habitat.—Santa Cruz de la Sierra, Bolivia, a single male, collected by J. Steinbach.

109. **Abracris conspersipennis** (Bruner).

Omalotettix conspersipennis BRUNER, MS., Biol. Cent.-Amer., Orthopt., II, p. 281 (1908).
Abracris conspersipennis BRUNER, Ann. Carnegie Mus., VIII, p. 110 (1911).

Habitat.—Four specimens, two males and two females, are at hand. They were taken at Santa Cruz de la Sierra, Bolivia, by J. Steinbach.

110. **Abracris meridionalis** (Bruner).

Omalotettix meridionalis BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 280, 281 (1908).
Abracris meridionalis KIRBY, Syn. Cat. Orthopt., III, p. 428 (1910); BRUNER, Ann. Carnegie Mus., VIII, p. 111 (1911).

Habitat.—Santo Antonio, Guaporé, Matto Grosso, Brazil, one female; and Santa Cruz de la Sierra, Bolivia, another female.

This is one of the larger species of the genus, and occurs over considerable territory.

Genus SITALCES Stål.

Sitalces STÅL, Bihang. Svensk. Akad. Handl., V, No. 9, p. 16 (1878); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 216, 291 (1908).

The species of *Sitalces* are also confined to tropical South America and the adjoining parts of Central America and the Island of Trinidad. Several species are known.

111. **Sitalces infuscatus** Bruner.

Sitalces infuscatus BRUNER, MS., Biol. Cent.-Amer., Orthopt., II, p. 291 (1908); IB., Ann. Carnegie Mus., VIII, p. 123 (1911).

Habitat.—A pair, male and female, were taken by J. D. Haseman. The male was collected at Madeira Falls, Rio Madeira, Brazil, October 17; and the female at Villa Bella, Bolivia, October 12.

Genus SCHISTOCERCA Stål.

Schistocerca STÅL, Recens. Orthopt., I, p. 64 (1873); SCUDDER, Proc. Amer. Acad. Arts and Sci., XXXIV, p. 441 (1899).

The locusts, which comprise the present genus, are, with a single exception, confined to the American hemisphere, where the species are widely scattered from the northern boundary of the United States to at least as far south in Argentina and Chile as the forty-third degree of latitude. These insects are, however, most abundant in the tropical and subtropical countries, where several of the species at times become much dreaded pests. Kirby in his *Synonymic Catalogue of Orthoptera* (Vol. III, pp. 454–462) lists seventy-three species. Since that work was published two or three additional forms have been recognized. One of these latter is described in the present paper and a second is admitted as possibly new.

112. **Schistocerca colombina** (Thunberg)?

Gryllus colombinus THUNBERG, Mém. Soc. Petersb., IX, pp. 399, 425, No. 92 (1824).
Acridium (*Schistocerca*) *colombinum* STÅL, Recens. Orthopt., I, p. 67, No. 17 (1873).
Schistocerca colombina SCUDDER, Proc. Amer. Acad. Arts & Sci., XXXIV, pp. 443, 449 (1899); BRUNNER & REDTENBACHER, Proc. Zoöl. Soc. Lond., 1892, p. 210.

For additional synonymy see Kirby, *Syn. Cat. Orthopt.*, III, p. 455.

Habitat.—A single female specimen bearing the label "Bogotá, Colombia," is referred here with considerable doubt. It belongs with accession number 2306.

There are also at hand a number of other specimens belonging to a former collection of the Carnegie Museum which has been in my possession for several years. These latter answer to Thunberg's description even better than does the individual just referred to above. They were collected at "Bonda (250 ft.) Dept. Magdalena, Colombia, S. A.," where they were taken by H. H. Smith. In their measurement the females exceed that given by Thunberg for his *Gryllus colombinus* ("Magnitudine fere grylli migratorii"). Some time ago I set these larger insects aside under the MS. name *Schistocerca maculipennis*, owing to the decided and large maculations which occupy the disk and apical half of the tegmina. These insects are also characterized by the pale oblique border on the lower margins of the pronotum, as well as by the black dotted carinæ of the hind femora. The measurements are as follows: length of body, ♀, 61 mm., of pronotum, 13.5 mm., of tegmina, 60.5 mm., of hind femora, 32 mm. They also approach Scudder's *S. æqualis*, but seem to be distinct from it as well.

The present writer also possesses several specimens of a *Schistocerca* taken on Grenada Island in the West Indies, which have likewise been referred doubtfully to Thunberg's *colombina*. These latter insects, however, are much too small for it, being in the females 41 mm. long, with tegmina that are only 39 mm. long. In general structure and color-pattern these small Grenadan specimens are very similar to the very much larger ones coming from the United States of Colombia. The two should be described as distinct species, and will be later.

113. **Schistocerca magnifica** sp. nov.

By far the largest species of the genus. Readily recognized by its uniform grayish brown color and by having the tegmina largely hyaline and without traces of maculation. Hind tibiæ and tarsi tinged above with coral-red. Antennæ flavous. Entire body rather closely clothed with short pale hairs, especially is this true on the meso- and meta-sternum.

Head only medium in size, a little narrower above than the anterior margin of the pronotum, occiput short, embraced by the former almost to the hind margin of the eyes, the face above the base of clypeus about as long as wide, nearly square; eyes not prominent, narrow, about as long as the anterior edge of the cheeks immediately below them; latter below rather finely and closely punctulate, above together with the occiput smooth; face rugoso-punctate; vertex between the eyes about a third wider than the diameter of the basal antennal joint, the fastigium of moderate size and very deeply sulcate, plainly broader than long, separated from the upper end of the frontal costa by a transverse impressed smooth area of paler hue; frontal costa not prominent, the lateral walls meeting above between the base of the antennæ and evenly divergent below, the sulcation rather profound and continuous to the clypeus; lateral or facial carinæ prominent, at their upper extremity somewhat sinuous, from a point opposite the median ocellus evenly divergent to the lower corners of the face. Antennæ filiform, a little longer than the head and pronotum taken together. Pronotum rather strongly rugoso-punctate, much more closely so on the hind lobe, the dorsum gently tectate, viewed in profile a trifle arcuate; median carina fairly coarse and prominent, distinctly severed by all three transverse sulci, the posterior one plainly in advance of the middle; anterior margin roundly advanced at middle upon the occiput, hind margin widely angulate; the sides of hind lobe decidedly divergent, giving the insect a robust appearance about the thorax. Meso- and meta-thorax moderately enlarged and rather closely and profoundly rugoso-punctulate. Tegmina large, long, for the most part membranous, rather sparsely veined on outer two-thirds, a little more closely so on the basal portion. Legs about normal, the hind femora not especially robust at base, but with coarse apical portion and heavy tibiæ, spines of the latter heavy, rather strongly curved and for the most part pallid, the upper carina of the femora rather prominently serrate. Prosternal spine slender, erect, as long as the coxal joints of anterior legs, the apex rounded.

Length of body, ♀, 60 mm., of pronotum, 15 mm., of tegmina, 71 mm., of hind femora, 33 mm., of antennæ, 19 mm., greatest width of pronotum, 12 mm.

Habitat.—This magnificent locust bears the label "Mathewtown, Great Inagua I., Bahamas, February 23, 1909, Worthington." The type is the property of the Carnegie Museum.

This is by far the largest species of the genus, if not the most beautiful, and must be a very attractive insect when alive. How it has thus far escaped collectors is an enigma to the describer. It is not very closely related to any of the other North American forms, nor does it approach those of South America any closer.

114. **Schistocerca inscripta** (Walker).

Cyrtacanthacris inscripta WALKER, Cat. Dermapt. Salt. Brit. Mus., III, p. 550, No. 3 (1870).

Acridium inscriptum THOMAS, Syn. Acrid. N. Amer., p. 228 (1873).

Schistocerca inscripta SCUDDER, Proc. Amer. Acad. Arts & Sci., XXXIV, pp. 444, 461, No. 21 (1899); KIRBY, Syn. Cat. Orthopt., III, p. 455 (1910).

Habitat.—Jamaica, West Indies, three males and two females.

115. **Schistocerca alutacea** (Harris)?

Acrydium alutaceum HARRIS, Rept. Ins. Mass., p. 139, No. 1 (1841); IB., ed. 3, p. 173 (1862).

Acridium alutaceum GLOVER, Illustr. N. Amer., Orthopt., pl. VIII, fig. 13, pl. X, fig. 13 (1872); THOMAS, Syn. Acrid. N. Amer., pp. 169, 171 (1873).

Schistocerca alutacea BRUNER, Publ. Neb. Acad. Sci., III, p. 26 (1893); SCUDDER, Proc. Amer. Acad. Arts & Sci., XXXIV, pp. 445, 464, No. 27 (1899); REHN, Ent. News, XIII, p. 312 (1902).

Habitat.—There is a single *Schistocerca* nymph among some miscellaneous Orthoptera taken in the Bahamas. It is referred here as being more likely this than any other species.

116. **Schistocerca desiliens** Scudder.

Schistocerca desiliens SCUDDER, Proc. Amer. Acad. Arts & Sci., XXXIV, pp. 443, 445 (1899); BRUNER, Ann. Carnegie Mus., VIII, p. 126 (1910).

Habitat.—There are two females of this species in the collection coming from Santarem, Grão Pará, Brazil. They were taken on the 7th of December, 1909, by J. D. Haseman.

117. **Schistocerca paranensis** (Burmeister).

Acridium paranense BURMEISTER, Reise La Plata Staaten, I, p. 491 (1861).

Schistocerca paranensis BRUNER, First Rept. Locust Comm. Buenos Aires, pp. 1–79, and figs. (1898); IB., Second Rept., pp. 1–11, 69, figs. 1, 31, 32 (1900).

Acridium (*Schistocerca*) *perigrinum* BERG (*nec* Olivier), An. Soc. Argent., IX, pp. 275–277 (1880).

Cyrtacanthacris approximans WALKER, Cat. Dermapt. Salt. Brit. Mus., III, p. 572, No. 44 (1870).

Habitat.—There are specimens of this insect before me coming from São Paulo, Brazil; Santa Cruz de la Sierra, Bolivia; and Rio Negro, Santa Isabel, Uruguay. The specimens coming from the last locality were taken February 12, 1909, and contained in a box with *Scyllina conspersipennis*, and bear the label "by the billions, a great pest in all central southern S. America this year—eat everything except leaves of coffee plant."

This is the chief destructive locust of Argentina and adjoining South American countries, Uruguay, Paraguay, Brazil, and Bolivia. In Chile most of the destruction is perhaps the work of *S. cancellata* Serville.

118. **Schistocerca gratissima** Rehn.

Schistocerca gratissima REHN, Proc. Acad. Nat. Sci. Phila., Feb., 1908, pp. 20–22, figs. 4, 5; BRUNER, Ann. Carnegie Mus., VIII, p. 128, note.

Habitat.—Specimens of this beautifully marked insect are at hand from Villa Bella and Rio Mamori, Bolivia, where they were taken by J. D. Haseman at the last named locality on September 20, 1909, and at the first mentioned locality on October 11, 1909.

The present writer referred this insect with doubt to Stoll's *Gryllus* (*Locusta*) *lineatus* (*Natuurl. Afbeeld. Besch. Springh.*, pl. XV*B*, fig. 57) in a former paper (*Proc. U. S. Nat. Mus.*, XXX, pp. 675, 676 (1906)).

Genus DICHROPLUS Stål.

Dichroplus STÅL, Recens. Orthopt., I, p. 88 (1873); BRUNNER, Ann. Mus. Genova, XXXIII, p. 145 (1893). For additional references see Kirby, Syn. Cat. Orthopt., III, p. 487.

The genus *Dichroplus* Stål takes the same place among South American locusts that his genus *Melanoplus* does among these insects in North America. The representatives of both genera are the common medium-sized spine-breasted grasshoppers of the meadows and open country. Some of the species become destructive in both continents.

119. **Dichroplus punctulatus** (Thunberg).

Gryllus punctulatus THUNBERG, Mém. Acad. Petérsb., IX, p. 408 (1824).

See additional synonymy in ANN. CARNEGIE MUS., VIII, p. 132.

Habitat.—The five specimens of the present species before me come from Santa Cruz de la Sierra, Bolivia. They were taken by J. Steinbach.

120. **Dichroplus bergi** (Stål).

Pezotettix bergii STÅL, Bihang. Svensk. Akad. Handl., V, No. 9, p. 7 (1878).

Dichroplus bergii GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 21 (1894); BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 679, 683 (1906).

Habitat.—A single female specimen is at hand. It was collected at Sapucay, Paraguay.

121. **Dichroplus exilis** Giglio-Tos.

Dichroplus exilis GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 23 (1894); BRUNER, Second Rept. Locust Comm. B. Aires, pp. 72, 75 (1900); IB., Proc. U. S. Nat. Mus., XXX, pp. 678, 681 (1906).

Habitat.—J. Steinbach's collection made at Santa Cruz de la Sierra, Bolivia, contains a single male specimen, which is referred here.

Genus PARASCOPAS Bruner.

Parascopas BRUNER, Proc. U. S. Nat. Mus., XXX, pp. 643, 689 (1906); IB., Ent. News, XXI, p. 307 (1910).

Scopas GIGLIO-TOS (*nec* Bonaparte), Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 29 (1894).

The locusts comprising the present genus are medium sized, short-winged insects. The described species are very similar in general appearance, but can be separated by the cercal characters of the males (see synoptic table, *Ent. News*, XXI, p. 307).

122. **Parascopas obesus** (Giglio-Tos).

Scopas obesus GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 29 (1894).

Habitat.—Two female specimens of *Parascopas* are before me as I write. They were taken at Puerto Suarez, Bolivia.

Genus CHLORUS Giglio-Tos.

Chlorus GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, XIII, No. 311, p. 50 (1898).

The present genus of the *Melanopli* was erected in 1898 by Giglio-Tos for the reception of his *Paradichroplus borellii* and Stål's *Pezotettix varicolor*. Since then two other species, *C. vittatus* and *C. brunneus*, have been added by me. Now a fifth form is at hand for characterization. With the exception of Stål's species, with Colombia as its habitat, they all occur in the region embraced by Paraguay, southwestern Brazil, and eastern Bolivia. They may be separated by the following synoptic table. The species *borellii* is the type.

SYNOPSIS OF THE SPECIES OF CHLORUS.

A. Larger (♂, 22–22.5 mm., ♀, 25–30 mm.).
  b. Hind femora interiorly and below sanguineous.
    c. General color green [Asuncion, Paraguay] .... *borellii* Giglio-Tos.
    cc. General color brownish; the hind tibiæ pale greenish yellow [Corumbá, Brazil] .... *brunneus* Bruner.
  bb. Hind femora interiorly and below not sanguineous.
    c. Dark greenish brown; sides of basal half of abdomen heavily marked with black. Hind femora deep green, lower sulcus greenish. *vittatus* Bruner.
    cc. Dark wood-brown; sides of basal half of abdomen but lightly marked with black. Hind femora brown above, black internally and on upper portion of disk externally, the latter bordered below with flavous; lower sulcus dark gray .... *bolivianus* sp. nov.
AA. Smaller (♂, 12 mm., ♀, 16 mm.). Pale dirty yellow or olive-yellow [U. S. of Colombia] .... *varicolor* Stål.

123. **Chlorus bolivianus** sp. nov.

Very similar in size and general form to both *C. vittatus* and *C. brunneus*, but differing from them in color. Inner face of hind femora totally black, the lower sulcus deep blue-gray. Body rather profusely hirsute.

Head large, about as wide as the front edge of the pronotum. Eyes large and moderately prominent, in the male nearly as broad as long, the latter dimension almost a third greater than the length of the anterior edge of the cheeks; in the females decidedly longer than broad, the former dimension little if any greater than the length of the anterior edge of the cheeks below them; vertex between the eyes about twice (♂) or three times (♀) as wide as the diameter of the antennæ, the fastigium rather large and depressed, strongly sulcate, spatulately widened toward the front. Frontal costa rather prominent, a little narrowed above, roundly sulcate throughout, but more profoundly so at ocellus, sparsely punctulate above the ocellus. Antennæ filiform, a little heavy, slightly surpassing the hind margin of the pronotum in both sexes. Pronotum rather robust, very perceptibly divergent to the rear, viewed sidewise gently arcuate above, without definite lateral carinæ, the lateral lobes somewhat tumid viewed from above, transverse sulci fairly deeply impressed, all three cutting the median carina, the last plainly back of the middle; anterior edge above truncate, posterior margin broadly rounded. Tegmina rather large, almost as broad as long, the apex as well as the costal and dorsal edges evenly rounded, the inner margins almost touching, closely and finely veined, extending well over the basal abdominal segment. Abdomen normal, in the male gently clavate; male cerci evenly tapering on basal half, beyond which point they are nearly equal and abruptly bent inward and backward, the apical half somewhat flattened and obliquely docked from above. Legs a little coarse or robust, in the female about reaching, in the male a little surpassing, the apex of the abdomen; hind tibiæ 8-spined on the outer edge. Prosternal spine of medium size, slightly transverse, acuminate, and gently directed to the rear; interspace between the mesosternal lobes about as broad as long, but plainly narrower than the lobes themselves.

General color above rather dark wood-brown varied with patches of lighter hues and flecks and dashes of fuscous; front, anterior and middle legs, and underside testaceous; lower half of the lateral lobes of the pronotum and middle of meso- and meta-pleura obliquely dirty white; a broad band back of the eyes and along the upper portion of the sides of the pronotum velvety black, in some specimens with an olivaceous tinge. Hind femora at the base and along the lower edge of outer disk flavous, remainder largely fuscous and black, except the lower edge and sulcus, which is deep gray, almost lead-color with a greenish tint. Hind tibiæ fuscous basally, becoming green tinted apically. Antennæ flavous at the base, changing to ferruginous apically.

Length of body, ♂, 22.5 mm., ♀, 30 mm.; of pronotum, ♂, 5.75 mm., ♀, 7.85 mm.; of tegmina, ♂, 4.5 mm., ♀, 5 mm.; of hind femora, ♂, 13 mm., ♀, 16.5 mm.

Habitat.—Santa Cruz de la Sierra, Bolivia, at an elevation above sea level of 450 meters, one male and two females, collected by J. Steinbach.

The types, male and female, are deposited in the Carnegie Museum.

Genus PARADICHROPLUS Brunner.

Paradichroplus BRUNNER V. WATTENWYL, Ann. Mus. Genova, XXXIII, p. 145 (1893); GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp., Torino, IX, No. 184, p. 20 (1894).

The present genus is composed of several medium-sized, nearly apterous locusts, which remind one very strongly of some of the North American genera of *Melanopli*. Its representatives are most abundant in the region comprised by southern Brazil, Paraguay, northern Argentina, and eastern Bolivia and Peru. The subjoined table will enable the student to separate the species described previously, as well as the three now characterized:

SYNOPSIS OF THE SOUTH AMERICAN SPECIES OF PARADICHROPLUS.

A. Hind tibiæ provided with nine spines in the outer row.
  b. Lower sulcus and inner face of the hind femora largely reddish. Color variable.
    c. Prevailing color yellowish or flavous, the dorsum of the pronotum and abdomen dusky. Head black............. *bilobus* Giglio-Tos.
    cc. Prevailing color variable, but with the dorsum of the pronotum not entirely dusky. Head concolorous, or at least not greatly varied with fuscous.
      d. General color varying from apple-green to pale brownish olive, the dorsum of the pronotum and abdomen varied with fuscous. *andeanus* Bruner.

dd. General color greenish olivaceous, the dorsum of the pronotum and abdomen pallid, not varied with fuscous. . *brunneri* Giglio-Tos.

AA. Hind tibiæ provided with eight spines in the outer row.

b. Hind tibiæ of the normal form, their lateral edges not acute and expanded toward the apex. Representatives denizens of woods or open fields removed from swampy grounds.

c. Larger (♀, 22–28 mm.).

d. Abdomen with 4 to 6 basal segments twice spotted at middle with black. Posterior femora internally sanguineous. *bipunctatus* Giglio-Tos.

dd. Abdomen with basal segments not twice black-spotted at middle. Posterior femora internally pallid, not sanguineous. *olivaceous* sp. nov.

cc. Smaller (♀, 18–21 mm.).

d. Color testaceo-ferruginous. Hind tibiæ orange-red; internal and external disks of hind femora infuscated or obscure. *rubripes* Bruner.

dd. Color more or less markedly olivaceous. Hind tibiæ greenish; internal and external disks of hind femora not especially infuscated.

e. Genicular area of hind femora marked with black lunules. *fusiformis* Giglio-Tos.

ee. Genicular area of hind femora pale ferruginous, without the dark lunules . . . . *geniculatus* Bruner.

bb. Hind tibiæ expanded apically and with their lateral edges more or less acute. Representatives possibly subaquatic, or at least denizens of swampy grounds and fitted for swimming.

c. Hind femora banded internally and externally with black or fuscous.

d. Smaller (♀, 14 mm. long) [Rio Apa, Paraguay]. *aberrans* Giglio-Tos.

dd. Larger (♀, 21 mm. long) [Puerto Suarez, Bolivia]. *steinbachi* sp. nov.

cc. Hind femora without fuscous bands both internally and externally. *subaquaticus* sp. nov.

124. **Paradichroplus subaquaticus** sp. nov

A medium sized rather hirsute insect, in which the general color is greenish olive, varied on the head and the pronotum with lines of dirty white or pale testaceous. Hind femora unicolorous, unbanded; the hind tibiæ decidedly expanded apically, and with the edges somewhat acute.

Head moderately large, a little wider than the front edge of the pronotum, the occiput short. Eyes prominent, large, a little longer than wide, their greatest diameter being almost twice as long as the anterior edge of the cheeks below them, separated above by a space no greater than the diameter of the antennæ. Fastigium of the vertex depressed, spatulately sulcate, the sulcation partially separated from that of the frontal costa by an obscure transverse V-shaped carina. Frontal costa moderately prominent, broadly sulcate, and provided with coarse lateral walls which diverge evenly below, continuous to the base of the clypeus; lateral or facial carinæ prominent, straight, gently divergent below. Antennæ rather coarse and moderately elongate, reaching to the hind margin of the metathorax or a trifle beyond. Pronotum a little longer than broad, viewed laterally gently arcuate above, transverse sulci deep, the hind lobe somewhat expanded, only about one-half as long as the anterior one; both the anterior and posterior margins roundly emarginate, the latter much more broadly so. Tegmina small, lateral, gently spatulate, and provided with four percurrent veins, their apex reaching about half-way across the abdominal segment. Abdomen rather small, tapering but little towards the apex, which terminates in a blunt point, prominently carinate above, especially on the basal two-thirds; last ventral segment short, scarcely as long as its basal width; supra-anal plate rather simple, triangular, with a fairly profound median sulcus, which is quite broad at the base, but narrowed evenly toward the apex; marginal apophyses of preceding segment moderately large, about twice as long as broad, their apex broadly rounded, touching on their inner margins and projecting into the basal portion of the sulcus of the supra-anal plate; cerci pyramidal or subpyramidal, somewhat flattened, a little more than twice as long as their greatest basal width, directed to the rear and gently inwards, the apical fifth finger-like. Prosternal spine moderately large, the base quadrate, tapering to a rather acute point, which is gently directed to the front; interspace between the mesosternal lobes not quite as wide as long and plainly narrower than the lobes themselves. Legs decidedly large and robust, especially is this true of the femora of all three pairs; the hind femora projecting fully one-third of their length beyond the tip of the abdomen; hind tibiæ expanded apically, eight-spined externally, nine-spined internally.

All the legs olive-green, sides of pronotum above much darker, inclining to brownish but still with an olivaceous tint; the lower portion dirty white, the disk brownish olive with testaceous lines separating this field from the postocular dark bands; occiput of a similar color, with testaceous lateral margins; face and cheeks olivaceous; antennæ inclining to ferruginous. Abdomen above brownish olive, the sides of the three basal segments prominently marked with piceous, lower side flavous. Hind tibiæ green, with spines largely black.

Length of body, ♂, 14 mm., of pronotum, 3.1 mm., of tegmina, 2.3 mm., of hind femora, 11 mm.

Habitat.—A single male specimen, the type, bears the label "Puerto Suarez, Bolivia, 150 M., Nov., '08–Jan., '09, J. Steinbach."

The structure of the hind tibiæ of this insect points to its possible aquatic or subaquatic habit. Its very minute and lateral tegmina also indicate a rather stationary existence, which would also be true with all of the other representatives of the genus. Possibly all of them are partial to certain food-plants from which they seldom stray.

125. **Paradichroplus steinbachi** sp. nov.

Most nearly related to *P. aberrans* Giglio-Tos, but a much larger insect than that species, as indicated in the synoptical table. Cinereo-ferruginous and more or less strongly conspersed with round fuscous dots on the pronotum and the basal abdominal segments above. Lower lateral margins of the former broadly ivory-white. Body moderately hirsute.

Head normal or small, the width about the same as that of the anterior edge of the pronotum. Eyes of moderate size, not prominent, decidedly longer than wide, their anterior margin nearly straight; vertex between the eyes about one and one-half times the diameter of the basal antennal joint, the fastigium rather short but broad, depressed, and widely but shallowly sulcate; frontal costa not especially prominent, a trifle broadest at its middle and sulcate throughout, the lateral walls coarse; facial carinæ prominent, divergent, gently sinuose. Antennæ filiform, a very little surpassing the hind margin of the pronotum. Pronotum evenly divergent posteriorly, without lateral carinæ and with but a slight median one; the anterior lobe a trifle more than twice the length of the posterior, the transverse sulci fairly prominent, the last alone continuous, the other two being interrupted by the inconspicuous median carina; anterior and posterior margins of the disk nearly straight. Tegmina minute, lateral, spatulate, about two and one-half times as long as their greatest width, sparsely veined, reaching three-fourths across the basal abdominal segment. Abdomen carinated, of normal form, its apex reaching slightly beyond the tips of the hind femora. Valves of the ovipositor moderately slender, the apical portion well curved. Prosternal spine large and blunt, somewhat transverse, the base subquadrate. Mesosternal lobes separated by a space about as broad as long and approximately equal to the lobes themselves. Anterior and middle legs slender, normal; the hind femora robust, the hind tibiæ eight-spined externally and decidedly broadened apically with acute margins, as in *aberrans* Giglio-Tos and *subaquaticus* described in the present paper.

General color cinereo-ferruginous or brunneo-testaceous, varied with darker and lighter markings. Sides of the head back of the eyes and upper portion of the sides of the pronotum provided with a fairly well-defined brown band in part made up of an agglomeration of dots and irregular blotches of that color; below this on the pronotum are conspicuous ivory-white patches. Basal abdominal segments conspicuously marked at their sides with piceous patches. Hind femora twice banded both internally and externally with fuscous, most pronounced on the inner face; the lunules of the genicular area black above, lower sulcus flavous; tibiæ grayish green, their apex and the tarsi tinged with ferruginous. Antennæ ferruginous.

Length of body, ♀, 21 mm., of pronotum, 3.8 mm., of tegmina, 2.5 mm., of hind femora, 11 mm.

Habitat.—The only specimen at hand, the type, which is a female, bears the same label as does the type of *P. subaquaticus* described above.

Although from the same locality and presumably collected somewhere near the same date as was the insect described under the name *subaquaticus*, it does not seem at all probable that the two insects could be the sexes of a single species. The well marked bands on the hind femora of *steinbachi*, a female, and the entire absence of them in *subaquaticus*, a male, seems to me to be sufficient evidence upon which to separate them, since these marks as a rule are most pronounced in male specimens.

126. **Paradichroplus olivaceus** sp. nov.

A trifle larger than other described species of the genus, a uniformly brownish olive-colored insect of rather robust build.

Head fully as broad as the front edge of the pronotum; the eyes large and prominent, a little longer than the anterior edge of the cheeks below them, their anterior margin straight, separated at the vertex by a space a trifle wider than the diameter of the basal antennal joint; fastigium of the vertex depressed, five-sided, shallowly sulcate and gently confluent with the sulcation of the frontal costa, which latter is fairly prominent and of nearly equal width throughout, continuous to the clypeus; facial carinæ strong, straight, a little divergent below. Antennæ slender, filiform, a trifle longer than the head and pronotum together. Pronotum very similar to that of *steinbachi*, but with the hind lobe relatively longer and with the hind margin very broadly and roundly emarginate instead of squarely truncate. Tegmina minute, lateral, spatulate, their tips gently surpassing the hind margin of the first abdominal segment. Abdomen about normal. Hind femora robust, gross, their tips reaching the apex of the abdomen. Hind tibiæ eight-spined externally, the lateral edges normal. Prosternal spine of fair size, pyramidal, the apex moderately acute, and gently directed to the front. Interspace between the mesosternal lobes wider than long, nearly equalling the lobes. Valves of the ovipositor not especially slender, nor yet robust, the apices quite strongly hooked and sharp.

General color as described above. Sides of the basal abdominal segments prominently marked with shiny black. Hind femora very faintly showing traces of dusky bands on upper margin; lunules of the genicular portion and sides of the basal portion of the hind tibiæ black. Lower face and sides of the pronotum faintly pallid. Lower surface a little more pallid than the remainder of the insect.

Length of body, ♀, 27 mm., of pronotum, 5 mm., of tegmina, 4.5 mm., of hind femora, 15 mm.

Habitat.—The type, together with another female, and a nymph were taken at Santa Cruz de la Sierra, Bolivia, at an elevation of 450 meters. They were collected by J. Steinbach.

Genus OSMILIA Stål.

Osmilia STÅL, Recens. Orthopt., I, p. 68 (1873); BRUNNER, Ann. Mus. Genova, XXXIII, p. 147 (1893); BRUNER, Biol. Cent.-Amer. Orthopt., II, pp. 222, 330 (1907–1908).

The various species of which the present genus is composed belong to tropical America. Nine species are recognized in Kirby's *Synonymic Catalogue of Orthoptera*. It might be stated here that these insects are so very similar in their general appearance and even in their structure, that no attempt has thus far been made to make a synoptical key for their separation.

127. **Osmilia flavolineata** (De Geer).

Acrydium flavolineatum DE GEER, Mém. Ins., III, p. 497, No. 13, pl. 42, fig. 4 (1773).

Acridium flavolineatum BURMEISTER, Handb. Ent., II, p. 634, No. 20 (1838).

Acridium (*Osmilia*) *flavolineatum* STÅL, Recens. Orthopt., I, p. 68, No. 18 (1873).

Osmilia flavolineatum BRUNER, Biol. Cent.-Amer., Orthopt., pp. 330, 331 (1908).

Habitat.—A pair, male and female, coming from Bogotá, Colombia, are placed here. They form part of accession number 2306.

128. **Osmilia violacea** (Thunberg)?

Gryllus violaceus THUNBERG, Mém. Acad. Petersb., IX, pp. 396, 413 (1824).

Acridium (*Osmilia*) *violaceum* STÅL, Recens. Orthopt., I, p. 68, No. 19 (1873).

Osmilia violacea GIGLIO-TOS, Boll. Mus. Zool. Anat. Comp. Torino, IX, No. 184, p. 18 (1894).

Habitat.—There are two males and six females of this genus before me that come from Santa Cruz de la Sierra, Bolivia, Paraguay, and several Brazilian localities. Although Kirby has included my former references to *violacea* among his synonymy of the previous species, I am still inclined to refer them to Thunberg's *violacea* on account of their bluish-tinted wings. I note that Giglio-Tos also referred an *Osmilia* from the same general locality to this species.

Genus RHYTIDICHROTA Stål.

Rhytidichrota STÅL, Recens. Orthopt., I, pp. 35, 54 (1873); BRUNER, Biol. Cent.-Amer., Orthopt., II, pp. 222, 237 (1907–1908).

Several apterous locusts of tropical South America that are below medium in size have been separated under the generic name *Rhytidichrota*. They occur in and about the margins of forests, where they live in moderate numbers among the low herbage.

129. **Rhytidichrota lævifrons** Stål.

Rhytidichrota lævifrons STÅL, Bihang. Svensk. Akad. Handl., V, No. 4, p. 78 (1878).

Habitat.—A pair of this locust was collected by J. D. Haseman on October 17th, 1909, at Madeira Falls, Rio Madeira, Brazil.

Genus PYCNOSARCUS Bolivar.

Pycnosarcus BOLIVAR, Boll. Soc. Esp., VI, p. 392 (1906).

Polysarcus SAUSSURE (*nec* Fieber), Rev. Zool., (2), XI, p. 392 (1859); BRUNNER, Ann. Mus. Genova, XXXIII, p. 148 (1893).

130. **Pycnosarcus atavus** (Saussure).

Polysarcus atavus SAUSSURE, Rev. Zool., (2), XI, p. 393 (1859).
Pycnosarcus atavus KIRBY, Syn. Cat. Orthopt., III, p. 544 (1910); BRUNER, Ann. Carnegie Mus., VIII, p. 147 (1911).

Habitat.—There is a single nymph of this odd-looking locust at hand. It was taken at Rio de Janeiro, and bears the accession number 2966.